

The American Economic Review

PART 2

Vol. XXIX, No. 1

SUPPLEMENT

March, 1939

Papers and Proceedings

of the

Fifty-first Annual Meeting

of the

American Economic Association

Edited by the Secretary of the Association

Inquiries and other communications regarding membership, meetings, and the general affairs of the Association, as well as orders for publications, should be addressed to the Secretary of the American Economic Association, Northwestern University, Evanston, Illinois.

General

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PROGRAM OF THE FIFTY-FIRST ANNUAL MEETING

Again this year an effort was made to construct a program revolving about a single general topic. The ramifying aspects of the topic selected, "The Changing Character of the American Economy," is introduced by Professor A. H. Hansen in his presidential address. Major aspects of this general subject are developed in four sets of main papers presented at the Wednesday, Thursday, and Friday morning sessions and at the Thursday evening session; namely, (1) "The Changing Character of Real Investment Outlets," (2) "Attributes and Market Tactics of Large-Scale Enterprise," (3) "Lessons of the Current Decade with Respect to Recovery Policy," and (4) "Labor Policy and Wage Theory."

A round table conference was devoted to each of the main papers, special aspects of which were treated by three or more participants (who in some instances prepared their material after holding a preliminary conference). These formal presentations were then followed by informal discussion from the floor.

With regard to program construction, the Committee first planned the topics and then invited the participants. Thus the whole program is designed as a unit, though the subject matter of some of the meetings warranted scheduling them as joint sessions with other associations.

The presidential address is, as a matter of custom, published in the March issue of the *American Economic Review*. All the main papers and summaries by chairmen of all round table sessions are included in this volume of the proceedings. In some instances, publication of round table papers has been arranged elsewhere; when known, note is made of this fact.

WEDNESDAY, DECEMBER 28, 1938

10:00 A.M. (Joint meeting with the American Statistical Association)

Topic: The Changing Character of Real Investment Outlets

Chairman: I. L. Sharfman, University of Michigan

Papers: Ralph J. Watkins and Glenn E. McLaughlin, University of Pittsburgh; David Weintraub, National Research Project; Morris A. Copeland, Central Statistical Board

2:30 P.M. (Joint sessions with the American Statistical Association)

A. Expansion and Contraction in the American Economy

Chairman: Stephen M. DuBrul, General Motors Corporation

Discussion: Oskar Lange, University of Chicago; Wendell D. Hance, Harvard University; Waldo E. Fisher, University of Pennsylvania

B. The Effect of Industrial and Technological Developments upon the Demand for Capital

Chairman: F. S. Deibler, Northwestern University

Discussion: Shelby Cullom Davis, Delaware Fund, Inc.; Henry H. Villard, University of Minnesota; Rollin F. Bennett, Columbia University

C. The Rôle of Public Investment and Consumer Capital Formation

Chairman: Roy G. Blakey, University of Minnesota

Discussion: Gerhard Colm, New School for Social Research; Ben W. Lewis, Oberlin College; G. Griffith Johnson, Jr., U. S. Treasury Department

D. Income and Capital Formation (Joint session with the American Statistical Association and the Conference on National Income and Wealth Research)¹

Chairman: W. Leonard Crum, Harvard University

Discussion: Hildegarde Kneeland, United States Department of Agriculture; Simon Kuznets, National Bureau of Economic Research; George W. Ter-borgh, Federal Reserve Board

5:00 P.M. *Meeting of the Executive Committee*

8:00 P.M. *Presidential Addresses* (Joint meeting with American Statistical Association)

Chairman: Frank A. Fetter, Princeton University

Papers: Alvin H. Hansen,² American Economic Association; R. H. Coats, American Statistical Association

THURSDAY, DECEMBER 29, 1938

9:00 A.M. *Business meeting*

10:00 A.M.

Topic: Attributes and Market Tactics of Large-Scale Enterprise

Chairman: Arthur R. Burns, Columbia University

Papers: Edward S. Mason, Harvard University; Willard L. Thorp, Dun and Bradstreet; Robert A. Gordon, University of California

¹ To be published in full by the Conference on National Income and Wealth Research.

² To be published in the March, 1939, issue of the *American Economic Review*.

2:30 P.M.

A. Price and Production Policies of Large-Scale Enterprise

Chairman: Myron W. Watkins, New York University

Discussion: Fritz Machlup, University of Buffalo; Paul T. Homan, Cornell University; Edgar M. Hoover, Jr., University of Michigan

B. Changing Distribution Channels (Joint session with the American Marketing Association)

Chairman: Roland S. Vaile, University of Minnesota

Discussion: John H. Cover, University of Chicago; Ewald T. Grether, University of California; E. R. Bowen, Co-operative League of the U.S.A.

C. Financial Control of Large-Scale Enterprise

Chairman: James Washington Bell, Northwestern University

Discussion: DR Scott, University of Missouri; Gardiner C. Means, National Resources Committee; Paul M. O'Leary, Cornell University

D. The Pure Theory of Production (Joint session with the Econometric Society)

Chairman: Joseph A. Schumpeter, Princeton University

Discussion: Irving Fisher, Yale University; Jacob Marschak, Oxford University; Paul A. Samuelson, Harvard University

8:00 P.M. (Joint meeting with the American Association for Labor Legislation)
Topic: Labor Policy and Wage Theory

Chairman: J. Douglas Brown, Princeton University

Papers: Sumner H. Slichter, Harvard University; Paul H. Douglas, University of Chicago; A. P. Lerner, London School of Economics

FRIDAY, December 30, 1938

9:00 A.M. *Business Meeting*

10:00 A.M.

Topic: Lessons of the Current Decade with Respect to Recovery Policy

Chairman: Arthur W. Marget, University of Minnesota

Papers: Charles O. Hardy, Brookings Institution; Gunnar Myrdal, University of Stockholm; John M. Clark, Columbia University

12:00 M. *Meeting of the Executive Committee*

2:30 P.M.

A. Divergencies in the Development of Recovery in Various Countries

Chairman: Chester A. Phillips, University of Iowa

Discussion: Gottfried Haberler, Harvard University; George N. Halm, Tufts College; Emil Lederer, New School for Social Research; Josef Herbert Furtth, Vienna

B. Factors Making for Change in the Character of the Business Cycle (Joint session with the American Farm Economic Association)

Chairman: James W. Angell, Columbia University

Discussion: Raymond J. Saulnier, Columbia University; Frank A. Pearson, Cornell University; Fritz Lehmann, New School for Social Research; Wilhelm Fellner, Budapest

C. Workability of Compensatory Devices

Chairman: Leonard L. Watkins, University of Michigan

Discussion: Paul T. Ellsworth, University of Cincinnati; Paul A. Samuelson, Harvard University; Emile Depres, New York

8:00 P.M.

A. Industrial Relations (Joint session with the American Association for Labor Legislation)

Chairman: A. Howard Myers, National Labor Relations Board

Discussion: Lloyd G. Reynolds, Harvard University; Philip Taft, Brown University; William Rice, Jr.,^{*} University of Wisconsin

B. Wages and Hours in Relation to Innovations and Capital Formation

Chairman: Z. Clark Dickinson, University of Michigan

Discussion: Witt Bowden, United States Bureau of Labor Statistics; Edna Lonigan, United States Treasury Department; Merrill G. Murray, Social Security Board

C. Relation of Wage Policies and Price Policies

Chairman: Earl J. Hamilton, Duke University

Discussion: C. Emery Troxel, Wayne University; Henry Oliver, Duke University; George W. Taylor, University of Pennsylvania

^{*}To be published in the March issue of the *Michigan Law Review*.

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THE purpose of the American Economic Association, according to its charter, is the encouragement of economic research, the issue of publications on economic subjects, and the encouragement of perfect freedom of economic discussion. The Association as such takes no partisan attitude, nor does it commit its members to any position on practical economic questions. It is the organ of no party, sect, or institution. Persons of all shades of economic opinion are found among its members, and widely different issues are given a hearing in its annual meetings and through its publications. The Association, therefore, assumes no responsibility for the opinions expressed by those who participate in its meetings.

JAMES WASHINGTON BELL
Secretary

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THE PROBLEM OF INDUSTRIAL GROWTH IN A MATURE ECONOMY

By GLENN E. McLAUGHLIN AND RALPH J. WATKINS
University of Pittsburgh

I. *The Main Question*

The general program of which this paper constitutes a part is concerned with the changing character of the American economy, with particular reference at this session to the subject of investment outlets. Preoccupation of economists with opportunities for investment is socially intelligible only in relation to the bearing of investment on industrial trends, i.e., on the question of the progressive evolution of the economic system on which we rely for the production and distribution of the goods and services required in the maintenance and upbuilding of our standard of life. It is clear, then, that the essential question before us relates to the workability of the American economic system under present-day conditions. This question of the workability of our economic system—which for want of a better term we may call a business enterprise system—is a broad one, but we venture to say that the survival of this system depends on satisfactory answers to two main questions:

First, can the system produce a progressive evolution of the economy and the upbuilding of the standard of living of the American people? It will be seen that this question has to do with secular trends and prospects. Second, can the system solve the problem of economic instability, or the problem of recurrent periods of marked under-utilization of the factors of production—particularly the human factor?

Although our own view is that the second of these questions is more crucial than the first in a consideration of chances of survival, we have to note that the present paper is concerned with the first of the two questions; namely, industrial growth in a mature economy, that is to say, with secular tendencies.

II. *Meaning of Maturity*

We shall not attempt here a precise formulation of the meaning of industrial maturity, nor shall we undertake to explore the causes of maturity. In passing we do voice the surmise that such formulation and exploration would lead one into a profound discussion of societal forms, of the emergence and disintegration of organizational patterns and techniques, and perhaps of the rhythmic surges of the human spirit itself. It scarcely needs be said that neither this forum nor these authors would be appropriate for that type of discussion. It is in point, however, to sketch some of the earmarks of industrial maturity.

The first evidence of maturity probably lies in the decrease in the rate of growth of heavy industries and of building activity, especially of factory construction. Maturity also involves the slowing down of the rate of growth of the total quantity of production, of employment, and usually of population. It probably will involve the rising relative importance of consumers goods. Lessened demand for capital in producers goods industries—mining, heavy manufacturing, and probably construction—can be expected, and a decrease in the rate of interest unless there is an offsetting increase in the demand for consumers goods. Such an offsetting increase is not likely to occur if there is a slowing down in population growth. If the sources of capital are withheld, because of the low rate of interest, because of painful memories of capital losses, because of a pessimism bred of inspection of mature trends, or because of fear of public interventions made necessary politically by those mature trends, then maturity may be quickly transformed into decay.

With this picture in our minds, let us examine the record of industrial growth of the American economy with particular reference to the dominant industries on which this industrial growth has depended.

III. *Historical Record of Dependence on Dominant Industries*

Throughout the colonial period and until the middle of the nineteenth century, agriculture remained the business of at least two-thirds of the population and was in all likelihood the major outlet for investment. Capital and enterprise found their richest rewards in the settlement of the West, in land speculation, and in the production of staples for the Seaboard or the European market.¹ But, during this period, shipping absorbed large amounts of capital and labor, and from the end of the War of 1812 to the depression of 1837 this country led in transatlantic commerce and in the building of vessels, for both domestic and foreign shippers. In some years the net earnings of shipping almost equaled the total value of agricultural exports. These two decades saw also heavy investment in turnpikes and canals, which along with other internal improvements resulted in a great importation of European capital.

In general, infant manufacturing ventures were not very successful in competition with shipping and agriculture for the meager sources of local capital. For the most part, manufacturers had to finance expansion out of slowly cumulating profits. To a considerable extent, textile production was an exception, aided as it was by the acquisition of surplus funds from the whaling industry. On the other hand, the growth of the more typical iron industry was financed mainly from the comparatively high rate of return it

¹ Herbert Heaton, "Industrial Revolution," *Encyclopaedia of the Social Sciences*, Vol. VIII, p. 9.

earned as a result of the growing use of tools and machinery, both in agriculture and in manufacturing.

After 1840, the rise of the railroads absorbed large amounts of capital and stimulated the development of manufacturing and farming in the interior of the country. As extensive industrialization got under way, the production process became more "round about." Heavier investments were required because of the use of more complicated machinery and the introduction of a more detailed division of labor. Capital funds in manufacturing were estimated in census returns to have increased from 50 million dollars in 1820 to 250 millions in 1840 and to 1 billion in 1860. The outstanding branch of manufacturing in 1860 was the production of flour and meal, which alone accounted for one-fourth of the total value of manufactured products. The most notable fields for investment in the next forty years—i.e., up to the turn of the century—were the railroads, iron and steel, coal, meat packing, and machinery. In 1900, the value of iron and steel products exceeded 800 million dollars, and the output of coal had risen to 212 million tons in comparison with 6 million tons in 1860. From 1850 to 1900, the population of the country trebled, the production of agriculture almost trebled, and the value of manufactures increased elevenfold. The industrial giant was clearly striking his stride.

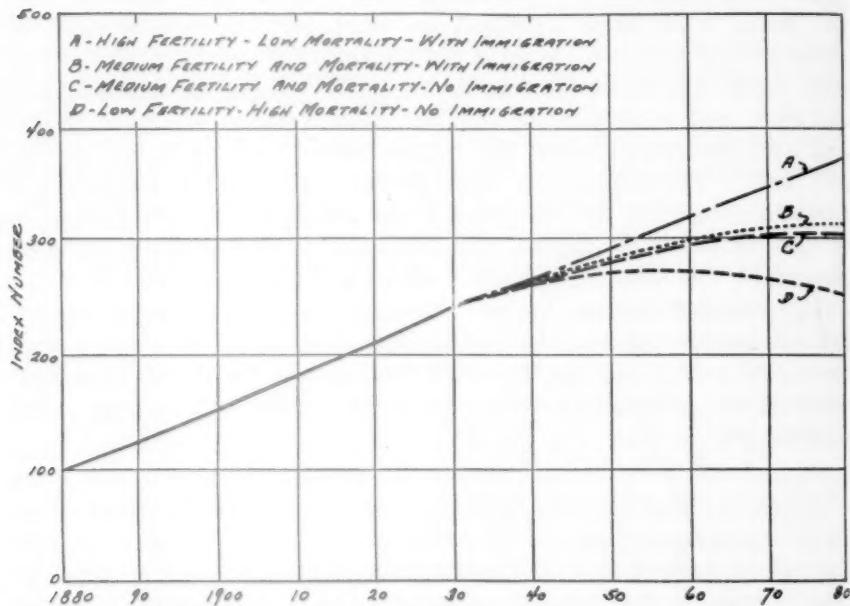
The twentieth century has witnessed not only an accelerated pace in industrialization but also the rise of important new outlets for capital. Prominent among these are the automobile industry, the electric equipment industry, the petroleum industry, the electric utility industry, and urban construction.

IV. Evidences of Maturity

Despite the phenomenal industrial gains in the American economy, there are increasing signs of retardation of both population and industrial growth, signs which suggest that the United States is approaching a stage of industrial maturity. The special committee on population problems of the National Resources Committee has estimated that maximum population will be attained within one or two generations, the most optimistic peak being set at 187 million people in 1980 and the most probable at 154 million in 1980 (Chart I). Among nearly all major industries, there has been a notable slowing down in the rate of growth since the World War. In some industries, production trends are horizontal or negatively inclined. Coal production has tended to drop since the World War, and there has been a significant downward trend in railroad passenger traffic since 1920, the present traffic volume being only about one-half what it was at that time. Although production trends continue moderately upward in steel, some branches of the industry, notably rails and wire rods, are characterized by falling trends. Passenger automobile production was roughly

15 per cent lower in 1937 than in 1929, although the trend of the industry may still be upward. Railroad freight traffic has also failed to pass its 1929 peak. Moreover, it is problematical whether the construction industry will soon pass its 1928 peak. Newer industries which have taken large amounts of capital in recent years also appear to be expanding at slower rates; examples are oil and gas and rubber. Indeed, retardation in growth appears to have taken place in the great majority of major American industries. Arthur F. Burns has shown that there is considerable evidence that most individual industries in agriculture, mining, and manufacture have

CHART I.—TREND OF POPULATION, UNITED STATES, 1880-1980*



* Actual 1880-1930, estimated by National Resources Committee, 1935-80.

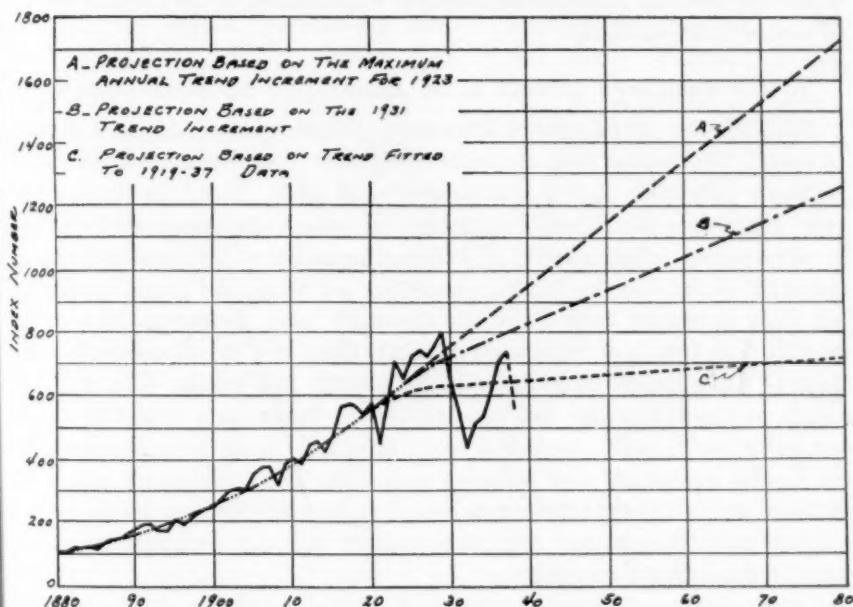
experienced abatement in their rates of growth and that very likely this abatement is true as well of the individual branches of forestry, fisheries, construction, transportation, and trade.²

Nor is there any great likelihood that the rates of industrial growth for major industries will stop falling. Within the past two decades there has been continued retardation of growth in older industries, and new industries have not developed fast enough to maintain a constant rate of increase in the total volume of goods produced. In an old, complex economy many new industries are required from time to time if the trend of industrial production is not to fall, but in such an economy new industries are increasingly difficult to develop. The revival of rapid growth in an old

² *Production Trends in the United States Since 1870* (1934), pp. 118-19.

industry usually requires a revolutionary change in the industrial arts. Generally, only in the early stages of development is the introduction of improvements rapid. Technical progress, in other words, proceeds at a declining rate, because the possibilities of important changes are more and more difficult to uncover. In this connection, Mr. William S. Knudsen, president of General Motors Corporation, in his recent testimony before the Temporary National Economic Committee, stated that it was virtually impossible at this stage in the development of the automobile industry that anyone would come upon a revolutionary invention.³ Likewise, Mr. Charles

CHART II.—INDEX OF INDUSTRIAL PRODUCTION,* UNITED STATES, 1880-1938, WITH VARIOUS TREND PROJECTIONS TO 1980



* W. M. Persons' index, 1880-1930; Federal Reserve Board index, 1931-38.

F. Kettering, vice-president of the same corporation, stated, "I don't see how that revolutionary thing could happen, especially in a highly developed art like automobile manufacturing. You just can't flash one of those things out. We have made about 45,000,000 automobiles now and the engineers have scraped those bones pretty carefully."⁴ Although we have seen the development within recent decades of dramatic new industries, such as the airplane, radio, air conditioning, and chemical industries, their importance has not been sufficient to affect materially the aggregate trend lines of industrial output (Chart II).

³ *New York Times*, Dec. 7, 1938, p. 1.

⁴ *Ibid.*

Within the nation are several older, more mature industrial areas. The experience of such an area may give some clues to the kinds of problems which arise in a mature economy: problems concerned with the creation of capital; with the outlet for savings; with the growing conservatism of investors; with the intensive use of capital and the mechanization of industry; with the application of capital to social needs; with the changing internal structure of the economy; and with the under-utilization of capital and labor. The Pittsburgh district is a mature industrial area whose growth trends began to taper off almost thirty years ago; and these problems there are acute ones. In the belief, therefore, that the Pittsburgh district offers an instructive case study of the problem of industrial growth in a mature economy, we shall turn our attention to a discussion of the clinical records of that regional economy.

V. The Pittsburgh District as an Example of Industrial Maturity⁵

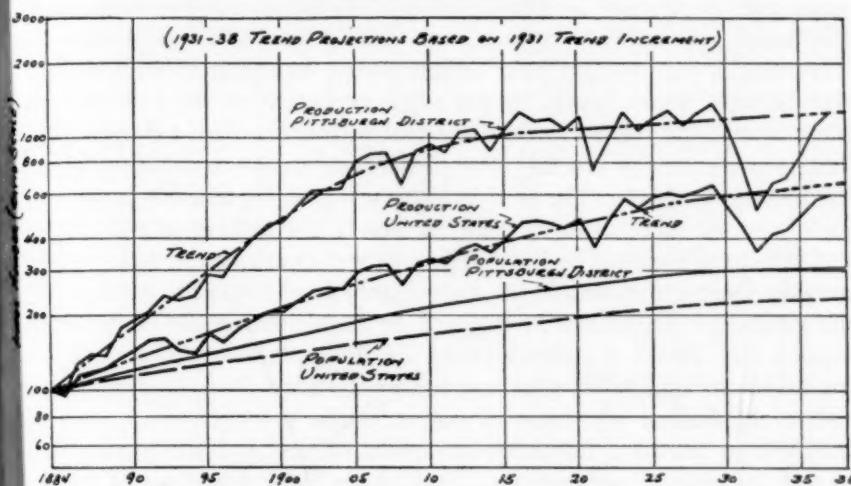
Basic Nature of Pittsburgh Industries. Pittsburgh is dominated by iron and steel, bituminous coal, electrical equipment, foundry and machine shop products (especially heavy machinery), and glass. These products, however, enter so widely into the making of consumers goods that changes in their output reflect general movements in industry. The major forms of industrial activity in the Pittsburgh district are all capital goods industries, but these industries have furnished the major basis for national industrial growth. The trends of Pittsburgh industry, therefore, are closely tied to the stage of development of industry in the country as a whole. Whenever the trends in manufacturing and construction in the country begin to flatten out, as in recent years, there is a sharp reduction in the new requirements for capital equipment and building materials. Thus, producers goods industries are peculiarly sensitive to broad industrial changes. Hence, Pittsburgh's industrial changes may in a measure indicate what may be anticipated in the national economy.

Comparison of Industrial Production Trends, Pittsburgh District and the United States. The Pittsburgh industrial district had its rapid growth before 1909; until that time the annual rate of growth in industrial production in the district was greater than that in the United States. In the past thirty years, however, Pittsburgh has been in a comparatively mature stage of development and has been growing less rapidly than the country as a whole. Growth in industrial production in the district began to taper off noticeably after 1909, whereas national industrial production did not show definite signs of slowing down until after the World War. Indus-

⁵ This section is based on the research studies published by the Bureau of Business Research, University of Pittsburgh, especially the following: Glenn E. McLaughlin, *Growth of American Manufacturing Areas* (1938), J. P. Watson, *Economic Backgrounds of the Relief Problem* (1937), and selected special articles from the *Pittsburgh Business Review*.

trially speaking, the Pittsburgh district reached maturity about two decades ahead of the country generally. Pittsburgh had its years of rapid industrial growth in the seventies, eighties, and nineties of the nineteenth century and in the first decade of the twentieth century, whereas national industrial growth has continued until recent years to feel the stimulation of rapid industrialization of the newer centers in the Midwest, in the South, in the Southwest, and on the Pacific Coast. Many of those centers will doubtless continue to grow rapidly, but areas of rapidly growing industrialization are becoming smaller as proportions of the total national

CHART III.—INDUSTRIAL PRODUCTION AND POPULATION: PITTSBURGH DISTRICT AND UNITED STATES, 1884-1938



economy. At the present time the composite industrial production trend line is advancing at about one-half per cent per year in the Pittsburgh district and at almost one and one-half per cent in the United States (Chart III). The Pittsburgh district, because of the basic nature of its industries and because of its later stage of industrial development, may serve as a guide to later developments in the national economy.

Economic Development of the Pittsburgh District. The first manufacturing industries in the Pittsburgh district were those supplying consumers' goods for the local population and for settlers moving farther west. After a time this western community began to specialize more in the exploitation of local resources—in the making of iron, heavy machinery, glass, and pottery—and for the most part gave up supplying local consumers' needs for manufactured articles. Railroad operation reduced transportation costs and allowed the exchange of local specialties for eastern manufactures. Thus, during the latter half of the nineteenth century western Pennsylvania became firmly integrated into the national economy when

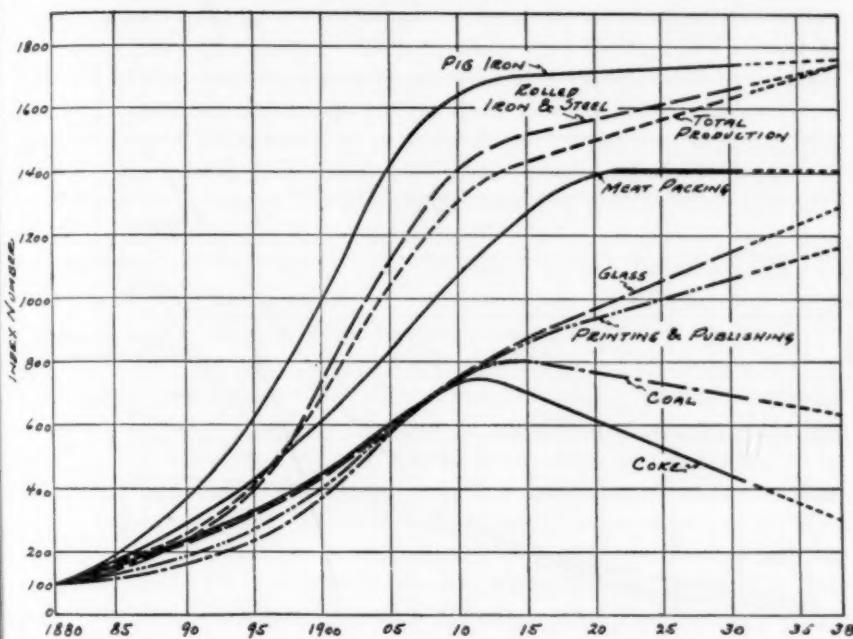
the district began to exploit its geographical position for the production of iron. The iron industry first became integrated in Pittsburgh, where Connellsville coke was used with Lake Superior ore. Thus, the main geographic advantages of the city in the iron industry consisted in its location near supplies of coal and near enough to Lake Erie to obtain relatively low freight costs on necessary supplies of ore.

During the 1870's industrial production in the Pittsburgh area was growing at a rising rate. Both coal and steel were expanding rapidly. Large amounts of capital were brought in from Philadelphia and New York, and the Pittsburgh district, which had started to develop industrially much later than these seaboard regions, began to grow more rapidly. The maximum rate of increase in population and in industrial production in the Pittsburgh area appears to have come during the 1880's. Population was increasing 4 per cent per year, largely owing to immigration. This influx was brought about largely by the rapid expansion of the iron and steel industry and the related increases in coal production. Great Bessemer converters and extensive crucible steel plants were constructed during this and the preceding decades. The steel industry was growing at a fast pace, owing mainly to the substitution of steel for iron in the making of railroad rails and structural forms. The Pittsburgh area was clearly in the stage of rapid growth. During this decade the annual growth of industrial production in the Pittsburgh district was 10 per cent, or double that in the United States. During the 1890's the development of the open-hearth process greatly improved the quality of steel and led to the acquisition of new markets and to the further expansion of output. These gains, however, were not sufficient to maintain the rates of population and industrial growth, although the gains in each remained high. After 1900, expansion of the local iron and steel industry began to slow up, and immigration into the area was retarded. By 1910 the era of rapid population and industrial growth was completed. In the decade ended in 1930 the annual rate of population increase fell to 1.4 per cent, and the trend in steel production became almost horizontal. Industrial production continued to grow at about one-half per cent per year.

Present Growth Patterns of Major Industries. Most of Pittsburgh's leading industries are comparatively old. The steel industry there is characterized by a rate of growth not far from zero, and coal and coke production show declining trends. The district is so dominated by these and related industries that comparatively favorable rates of growth in glass, electrical equipment, and aluminum are of only minor assistance in raising the trend of total industrial output. Even if new industries appear, they will for a long time be dwarfed by the overwhelming importance of the older forms of economic activity. The absence of any new major activity in the twentieth century is worthy of note in connection with the marked retardation

about 1909 in industrial growth and indirectly in population growth. Although none of the new important industries which have developed in the United States in the past forty years have taken root in Pittsburgh, many of them have been large consumers of coal, steel, heavy machinery, and glass, in part obtained from western Pennsylvania. Aluminum, electrical equipment, and glass are three industries which have apparently not yet reached maturity in the Pittsburgh district and which have continued to exercise a stimulating influence on manufacturing activity—even though

CHART IV.—PRODUCTION TRENDS IN SELECTED OLDER INDUSTRIES IN THE PITTSBURGH DISTRICT, 1880-1938

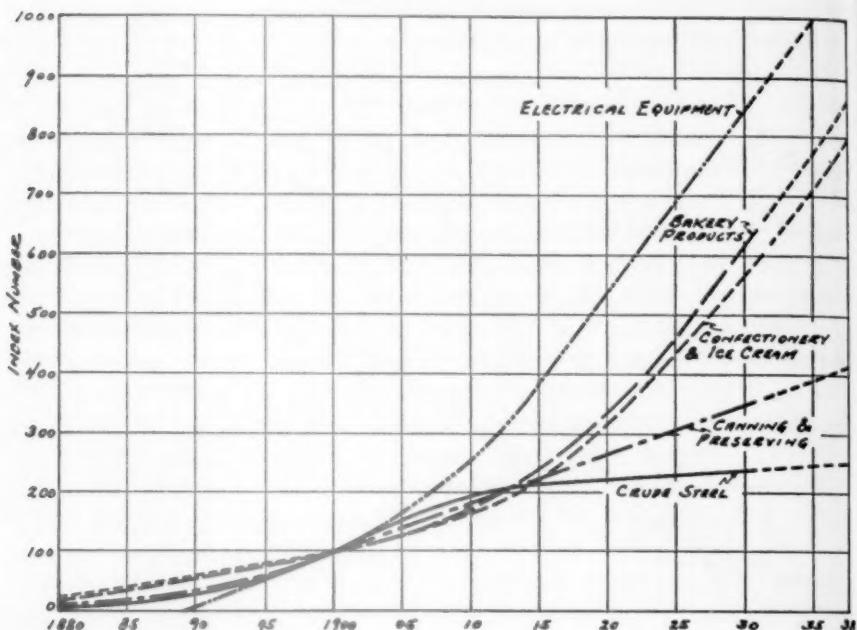


overshadowed by coal and steel. Other forms of manufacturing which are growing rapidly are included mainly in the category of consumers' industries (Charts IV and V).

Structural Changes in the Pittsburgh District. The major post-War changes affecting the industrial structure of the Pittsburgh district have been the decrease in coal production; the marked slowing down of expansion in manufacturing output; exceedingly rapid increases in service activities; the continued shift of manufacturing operations from the nucleus city to the smaller industrial cities in the periphery, especially along the Ohio, Monongahela, and Allegheny rivers; the increasing centralization of the district's service functions in Allegheny County, and mainly in Pittsburgh; and in many counties the decreasing relative importance of em-

ployment in mining and manufacturing and, within manufacturing industries, the decreasing relative importance of the iron and steel industry. Some of these diverse tendencies within the Pittsburgh district had their counterparts within the nation and thus reflected a general shift in the national economy under which fewer workers were required in coal mining and manufacturing and more in the manifold and growing trade and other service functions which rising standards of living and increasing specialization demand. Other changes represent the rise of a metropolitan

CHART V.—PRODUCTION TRENDS IN SELECTED NEWER INDUSTRIES IN THE PITTSBURGH DISTRICT, 1880-1938



economy and the co-ordination of the various activities of the district on a regionalized basis. Thus, the increase in the number of persons engaged in service functions in Allegheny County reflects the growing extent to which the nucleus city and its environs take over trade and other service functions for a large metropolitan area and tributary economic region—functions concerned not merely with management control and financial direction but also with all the varied recreational, cultural, governmental, health, and social activities that go to make up the life of a region.

Effects of Slowing Down of Growth. Retardation of industrial growth in the Pittsburgh district has been accompanied by large exports of capital to other parts of the country, for investment both in industries familiar to Pittsburghers and in newer forms of productive activity and by more in-

intensive development and expansion of local industrial concerns. On the other hand, industrial maturity seems to have brought with it greater likelihood of under-utilization of labor and capital, greater susceptibility to wide cyclical swings in production and employment, and shortage of capital for social improvements.

Pittsburgh became an important investment center at about the time that it began to show signs of industrial maturity. Indeed, somewhat earlier there were evidences that capital and men were moving from Pittsburgh mainly to the West, South, and Southwest to establish newer concerns in the steel, coal, and petroleum industries. With the arrival of full maturity after the World War, Pittsburgh's need for "economic colonies" became acute, and large quantities of local savings—and War profits—were invested in other districts, primarily in steel and oil but also in sulphur, aluminum, glass, electrical equipment, food canning, public utilities, and a great variety of other forms of business. In part, outside investments have taken the form of branch plants of Pittsburgh-controlled concerns or of fellow subsidiaries where the Pittsburgh operating concern was controlled elsewhere. For example, large amounts of Pittsburgh profits must have gone into the development of the Gary steel district. More recently, the development of Pittsburgh as an important investment banking center, containing as it does one of the country's major underwriting groups for the sale of new securities, has facilitated the flow of Pittsburgh savings through investment channels to all parts of the country as well as abroad.

Industrial maturity and the absence of important new industries have meant that if Pittsburgh capital was to be invested locally it had to be used primarily in the further mechanization and rationalization of Pittsburgh's industries. This intensive investment is exemplified in the steel industry by the construction of continuous rolling mills, in the coal industry by mechanization of mining methods and transportation, and in the glass industry by the development of new manufacturing processes. Moreover, the turning back of capital into the same industry has required the careful study of investment opportunities and has led to the organization of large research laboratories in the district, particularly those in steel, coal, oil, glass, and aluminum. Some Pittsburgh capital no doubt is being used in the development of new local industries, but in such a mature area a large proportion of capital funds must be exported.

In the peak year of 1929 there was considerable under-utilization of capital and labor. In most of the months of that year from 5 to 10 per cent of the workers were entirely without jobs. Moreover, those who had jobs suffered appreciable loss of working time in that year, being idle in various months from 4 to 16 per cent of the time. For the normally gainfully employed population as a whole, total unemployment and underemployment of those with jobs have been estimated for 1929 as the equivalent

of total unemployment of all workers, 14 per cent of the time. Average overcapacity of plant facilities during that year was probably of the same general order of magnitude or greater. From 1929 to 1932 the declines in employment and production were drastic. For example, man-hours in manufacturing industries fell 59 per cent from the 1929 average; and the volume of industrial production declined 62 per cent. Total unemployment at the low point (August, 1932), according to published estimates, amounted to almost 40 per cent of the normally gainfully employed population.

Although the evidence is not entirely convincing, the fifty-five-year record of industrial production in the Pittsburgh district seems to indicate that cyclical swings have become more severe and that under-utilization has tended to last longer as the economy has become more mature. This relationship is probably not a chance one, because a sharp upward trend in industrial production is exceedingly effective in wiping out the effects of past errors in judgment and in canceling the losses of depression. Thus a given depression is not so tragic in its consequences if growth is so rapid that the preceding peak is destined to be exceeded in level by the trough of the next depression. This relationship obtained in the Pittsburgh district during the seventies, eighties, and nineties and into the nineteen hundreds up to 1907. Thereafter, the story has been painfully different, so much so that the 1932 trough was lower than the trend value for 1901, and the low month of June, 1938, was only slightly above the 1901 average. Certainly, it can be said that the greater industrialization and urbanization that have come with increasing maturity have heightened the vulnerability of the district's population to cyclical swings. Moreover, the growing relative scale of monetary expenditures—another concomitant of maturity—has probably had the effect of increasing both intensity of cyclical fluctuations and vulnerability to depression.

Economic Outlook for the Pittsburgh District. In summary, the economic outlook for the Pittsburgh district is that of a mature economy. No great change appears likely in the present annual increment of about 0.5 per cent per year in the trend of industrial production, and the rate of population growth in the 1920's of 1.4 per cent per year is almost certain to be lowered. The necessary acceleration of industrial growth adequate to support an annual increase in population in the Pittsburgh district of 1.4 per cent per year does not appear imminent. Unless the area witnesses another great expansion of service occupations, the basis for which is not in sight, continued migration to other districts appears probable.

Pittsburgh's industries are old and basic. They are dependent on such a great variety of consuming industries that only a general outburst of national productive activity is likely to lead to a material increase in their rates of growth. Moreover, since new industries of considerable size do not

appear to be in prospect in the district in the immediate future, not more than a continuation of the slow-growth trends established during the past quarter of a century can be expected. Consequently, unless the rate of population growth drops or migration from the area continues, there is a strong probability of a slow decrease in per capita income.

In the Pittsburgh district, the demand for capital will probably be largely for the purpose of making replacements. Excess savings are likely in the main to be invested in other areas as in the past three decades. One of the major problems of industrial maturity is likely to be the shortage of capital for improving social conditions. Many social and governmental problems created during the boom stage of development have been left for solution in the stage of industrial maturity—when the cost can be least afforded. Moreover, the very effort to solve these problems is likely to aggravate their nature. When a region reaches industrial maturity, there is always the danger that industry may begin to move away from the area and from the problems which it has created, a movement that may likely be accelerated by efforts to solve those social problems created by prior growth. Further, those who have retained much of the profits of the period of rapid growth are likely to move along with their savings to other and greener pastures or at least to send their capital to more promising fields. Thus the social consciousness that develops with industrial maturity may develop too late for effective action. Its very development may, in fact, accelerate the processes of decay; and what was a mature area may become a depressed and stranded area. Some of these problems with respect to the improvement of living conditions and with respect to the solution of governmental problems threaten to become acute ones in the Pittsburgh district. Adequate housing and civic, recreational, and health facilities were not provided when the area was producing wealth rapidly. It may be impossible to provide these services at a time when most of the capital funds of the area are invested elsewhere. "It may be later than we think," but if it is too late—within the framework of an enterprise system—then from the people of that area we can, in our judgment, expect increasing pressures in the direction of public and joint private and public investment.

VI. *Conclusions*

Attention has been devoted in this paper to the Pittsburgh district as a case study in industrial maturity, in the conviction that Pittsburgh's experience with industrial maturity during the past three decades is instructive to the nation; that the sorts of social and economic problems encountered there are likely in some degree to be met with in the nation over the coming years. In order that we may bring into sharp relief what we consider the lessons of that experience, we shall now attempt to outline some of the

problems of industrial maturity that we anticipate will require the attention of those in industry and government who must concern themselves with economic and social policy:

1. Slowing down of industrial trends means a diminished opportunity for investment and a discouragement to initiative.

2. Under these circumstances investors become increasingly cautious and conservative; investment is primarily for replacement and for the more intensive use of capital through mechanization and improvement of processes.

3. Both investors and enterprisers turn their attention to more promising fields elsewhere, thus seeking "economic colonies" for investment and development.

4. These tendencies further aggravate the problem of industrial growth since they tend to deprive the economy of both capital funds and aggressive enterprisers.

5. The slowing-down process of industrial maturity is likely to be especially devastating in its effects on real estate values, leading to stagnation or retrogression in these values and thereby cutting off the flow of investment into construction, with a consequent further depressing influence on industrial trends.

6. Industrial maturity is likely to bring with it more serious and more frequent periods of under-utilization of the factors of production.

7. Shortage of capital for social improvements develops just at the time when social consciousness emerges to demand such improvements. The political pressures supporting these demands are likely to lead to measures which further undermine that economy or weaken its position with respect to other economies which stand in a competitive relation to it, either as investment outlets or as market outlets.

In short, it is probably fair to say that an enterprise system functions best in an expanding economy; and that the appearance of industrial maturity raises profound questions concerning the ability of an enterprise system to produce a progressive evolution of the economy under conditions of maturity. We believe that it is essentially these questions which lie behind the transformation of economies throughout the world in recent years—transformations involving increasing public participation. The problem of the American economy is to adjust itself to these influences and at the same time to preserve the maximum benefits of an enterprise system. This problem is not a simple one; rather, it will require co-operation of a high order between industry and government—industrial statesmanship as well as political statesmanship.

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EFFECTS OF CURRENT AND PROSPECTIVE TECHNOLOGICAL DEVELOPMENTS UPON CAPITAL FORMATION¹

By DAVID WEINTRAUB

National Research Project, Works Progress Administration

I

Almost all changes in industrial techniques call for some sort of equipment and imply some measure of capital outlay. The volume of outlay involved depends in each instance upon the nature of the change, the character of the equipment, and the scale on which the change is introduced.

In discussions of past technological progress, the changes that are usually emphasized are the revolutionary innovations: the emergence of the factory system, machine production and steam power, the development of railway transportation, the rise of the steel industry, the coming of electric power, and, in our day, the growth of modern chemical industries and motor transportation. All these technological changes involved capital expenditures in more than one way. As they were introduced and gradually adopted, they called for heavy new capital outlays, especially when they represented the rise of new industries. Even when they resulted in the substitution of new for old practices, they required an enormous net enlargement of capital equipment; and as the demand for the new products grew, additional capital was required for an expansion of plant and equipment to meet that increased demand.

Indeed, when viewed in broad historical retrospect, the march of technological progress appears as a succession of revolutionary innovations. It was accompanied by a growth in the volume of physical capital both per unit of labor employed and per unit of output. The capital-equipment industries grew at even faster rate than industrial production, and the industries producing capital goods acquired in all industrial countries an increasingly leading part in the total economy. Since the number of persons engaged in the production of capital goods became a larger and larger proportion of the total gainfully occupied population, consumers' demand and, consequently, all production became increasingly dependent upon developments in the capital goods industries.

More recently, however, there has been observed a growing importance of technological changes which result in a much smaller demand for capital goods although their effect in increasing the productivity of labor, reducing unit costs of production, and improving plant capacity continues to be considerable. These technological changes are directed primarily at im-

¹ In the preparation of this paper I was assisted by Alexander Gourvitch to whom I am also grateful for penetrating criticism and constructive suggestions. George Perazich supplied much of the illustrative material. Mr. Gourvitch and Mr. Perazich are both members of the research staff of the WPA National Research Project.

proving the existing industrial technology in contradistinction to the earlier changes which tended to make the prevailing techniques and the existing equipment obsolete.

In the light of the historical association between technological change, the increasing importance of the capital goods industries, the growing dependence of total employment and income on these industries, and their relatively low level of production during recent years, the question naturally presents itself: What stimulus to a recovery of our capital goods industries may be expected from the technological developments which are now current?

The available data on the major fields of economic activity show that the average output per man-hour in most industries increased after 1929, even during the years of declining production, although the increases were then often at a slower rate than before. With recovery in production, the pre-1929 rates of increase were either resumed or exceeded.² Of course, increases in output per worker or per man-hour are not measures of technological progress. Changes in productivity at all times reflect the complex action of a number of diverse factors, and in times of depression, with a large part of productive capacity unused, they may reflect changes in conditions of operation that are not necessarily associated with technological improvements. The operation of factors which result in increased productivity and their relationship to technological changes vary so greatly in different industries (according to the technical requirements of production, the organization and the economics of their operation, and the conditioning factors in their markets) that only intensive studies of the several industries can hope to determine the approximate effects of specific technological changes on labor productivity. Nevertheless, we know that technological changes have been at work throughout the years since 1929, and it is possible to stake out certain general technological trends which are observable as major factors in a variety of industries during the past decade or so and to examine their effects on the demand for capital goods, on productive capacity, and on labor productivity.

In this paper it is intended to pass in review some of the outstanding technological changes of recent years, now under way or impending in the immediate future, and to see whether the recent low levels of production in the capital goods industries are not in some manner associated with the character of these changes.

II

One of the general technological developments has been the increasing utilization of large-capacity equipment.³ This has been a pronounced trend

² See David Weintraub and Irving Kaplan, *Summary of Findings to Date, March, 1938* (WPA National Research Project, Mar., 1938).

³ Report in preparation on large-capacity equipment, by George Perazich and Herbert Schimmel, WPA National Research Project.

in regard to many diverse types of equipment of a general use such as industrial locomotives and power shovels, as well as of such specialized equipment as cement kilns, roller mills in flour milling, or milling equipment used in the recovery processes of various mining industries.⁴

Aside from the fact that the availability of large-capacity equipment provided the technological basis for the tendency toward a concentration of production in fewer and larger plants, the trend toward larger-capacity units was accompanied by decreases in equipment expenditures per unit of capacity. For instance, a report of the Federal Power Commission⁵ shows that steam power units installed in central stations during the period 1931-34 averaged over 30,000 kilowatts in capacity as against approximately 15,000 kilowatts per unit in 1921-25. The original investment per unit of capacity is a great deal smaller for large steam-electric generating stations than for small ones, ranging from \$135 to \$150 per kilowatt for stations of a capacity of 2,000 kilowatts to \$92 to \$115 per kilowatt for stations of 200,000 kilowatts.⁶ The cost per unit of capacity in the case of boilers capable of producing one million pounds of steam per hour is less than one-half that of a boiler with one-tenth that capacity.⁷

Likewise, in Diesel plants investment per unit of capacity varies inversely with the capacity, declining from \$230 to \$106 as the capacity increases from 100 to 10,000 kilowatts.⁸ In the flour-milling industry the cost per unit of capacity of a roller mill with an hourly capacity of 50 bushels is twice that of a larger mill with a capacity of 115 bushels.⁹ The cost of spiral screw conveyors used in flour mills declines from \$2.83 per unit of capacity (100 bushels per hour per foot) on small conveyors with a capacity of 60 bushels per hour per foot, to \$0.23 as the capacity is raised to 1,000 bushels per hour per foot, and to \$0.10 for conveyors of a capacity of 4,500 bushels per hour per foot.¹⁰

Again, wherever large-capacity electric motors are required, similar economies in investment per unit of motor capacity are secured as the capacity

⁴ Thus in the case of industrial-type gasoline locomotives the average size of individual units sold in 1932-36 was 11.4 tons as compared with 7.4 tons in 1924-27. The average digging capacity of power shovels sold to mining industries by a representative group of companies in 1932-36 was 3.28 cubic yards; this compares with an average capacity of 2.51 cubic yards for the years 1928-31, of 1.90 cubic yards for 1924-27, and of 1.73 cubic yards for 1920-23. In the flour-milling industry the average size of roller mills introduced in the years 1930-34 was approximately 22 per cent higher than of those introduced in 1920-24 (field data of the National Research Project). For other illustrations see, for example, the following WPA National Research Project reports done in co-operation with the U. S. Department of the Interior, Bureau of Mines: A. V. Corry and O. E. Kiessling, *Grade of Ore* (Report No. E-6, Aug., 1938) and A. P. Haskell, Jr., and O. E. Kiessling, *Phosphate-Rock Mining, 1880-1937* (Report No. E-7, Nov., 1938).

⁵ *National Power Survey: Interim Report, "Power Series, No. I"* (1935), pp. 22-3.

⁶ *Electrical Engineers' Handbook*, Vol. 4 (1936), section 13, pp. 12-3.

⁷ *Power Plant Engineering*, Vol. 41 (Jan., 1937), pp. 27-9.

⁸ *Electrical Engineers' Handbook*, pp. 33-4.

⁹ Based on manufacturers' catalogues.

¹⁰ Based on manufacturer's catalogue.

of the motors increases.¹¹ Even in agriculture, which is characterized by small-scale enterprise, there is a clear tendency toward increasing size of implements and machines with declining investment per unit of capacity.¹²

While the transition to large equipment units means a smaller capital outlay per unit of capacity, it permits at the same time further economies in the utilization of the equipment. In many cases large-capacity equipment will, for instance, justify the use of refinements and of auxiliary devices which result in improved efficiency of operation. The advantages of large-capacity units are also often due to greater mechanical efficiency.¹³ Furthermore, the operation of large machinery involves the use of a considerably smaller amount of fuel and also of labor per unit of capacity or of output than is called for in the operation of smaller equipment units.

In addition to those direct economies brought about by the introduction of large-capacity units, there are indirect ones, such as those associated with installation costs per unit of capacity. Floor space required per unit of capacity is much smaller for larger than for smaller units. Saving in floor space clearly implies a smaller volume of plant construction to secure a given productive capacity. There are similar economies in transportation costs per unit of capacity as larger capacity units are used.

¹¹ The price per horse-power of 500 r.p.m. Westinghouse motors of the squirrel-cage type declines from \$9.30 for a motor of 250 hp capacity to \$6.20 for a motor of 1,000 hp; for motors of the wound-rotor type the price declines from \$12.00 to \$7.80 as the capacity is thus increased. (Information supplied by the Westinghouse Company.)

¹² The retail price of a horse-drawn sulky plow with one 14-inch bottom in 1936 was \$84.75 as against \$125.00 for a gang-plow with two 14-inch bottoms; that of a horse-drawn 6-foot disk harrow, \$55.50 as compared with \$68.00 for an 8-foot disk harrow; that of a 1-row horse-drawn cultivator, \$66.75 as compared with \$101.75 for a 2-row cultivator. The price of a tractor-drawn 6-foot disk harrow was \$102.50, and that of an 8-foot disk-harrow, \$120.25; that of an 8-foot grain binder, \$344.07, and that of a 10-foot binder, \$350.74. Prices of tractor-drawn equipment are higher than those of horse-drawn equipment of the same working width, the difference ranging from \$128.00 and \$125.00 for a gang-plow with two 14-inch bottoms to \$120.25 and \$68.00 for an 8-foot disk-harrow; but the tractor-drawn machine is usually more carefully and strongly built, so that it either lasts longer or is used over a greater total acreage of crop. (Information supplied by International Harvester Company.) For data on trends toward increasing use of larger implements and machines see the following WPA National Research Project reports published under the general title *Changes in Technology and Labor Requirements in Crop Production*: L. K. Macy and Others, *Sugar Beets* (Report No. A-1, Aug., 1937); H. E. Knowlton and Others, *Potatoes* (Report No. A-4, Mar., 1938); L. K. Macy and Others, *Corn* (Report No. A-5, June, 1938); W. C. Holley and L. E. Arnold, *Cotton* (Report No. A-7, Sept., 1938); and R. B. Elwood and Others, *Wheat and Oats* (Report No. A-10, in press).

¹³ Thus engine efficiencies of noncondensing turbines are approximately 65 per cent for units of 1,000 kw, and 73 per cent for those of 4,000 kw. In the 1937 models of Westinghouse electric motors, for instance, the efficiency of the squirrel-cage-type motor varies from 76 per cent to 90.7 per cent as the capacity of the motor increases from 1 to 250 hp, and it attains 93 per cent on motors of 1,000 hp; for motors of the wound-rotor type the efficiency rises from 80 per cent to 91 per cent as the capacity increases from 5 to 250 hp and to 93 per cent for a capacity of 1,000 hp. (Information supplied by Westinghouse Company.)

The average efficiency of new boilers installed in central power stations in the period from January 1, 1936, to April 30, 1937, was found to vary from 84.6 per cent in boilers having a capacity of less than 100,000 pounds of steam per hour to 87.2 per cent in boilers of a capacity of 400,000 pounds and over; for boilers installed in the same period in industrial plants, the corresponding range is from 81.6 per cent to 84 per cent. (Compiled from *Power*, Sept., 1937.)

The obvious implication of the trend toward larger-capacity equipment is that during the recovery period after 1933—as idle plants were being put into operation and as old obsolete machinery was being replaced—considerably smaller capital outlays and less construction of equipment were required than in the middle twenties to secure the same or even an increased volume of output.

Closely associated with the increasing use of larger equipment units has been the growing importance of industrial measuring, recording, and controlling devices. In a great many cases the use of large units has been made possible only through the development of proper controlling devices. Automatic controllers have helped, for example, to overcome the difficulties of proper manual control of large machine tools. The operation of equipment such as that used in petroleum refining would hardly have been possible without the use of such instruments. The development of controlling devices whose function it is to safeguard machinery against breakdown and excessive wear has served to offset the capital losses which are greater on breakdowns of larger than on smaller equipment units.

During the period of expansion of industrial activity after 1921, the installation of measuring and controlling devices took place at a more rapid rate than the installation of other industrial machinery. For each \$1,000 invested in industrial machinery in 1921, approximately \$5 went into the production of instruments; by 1929 the ratio had increased to \$10. Then as the depression set in and the production of all equipment, including instruments, declined, the proportion of instruments to the total continued to grow, and the ratio advanced to \$15 per \$1,000 in 1933.¹⁴

These increasingly important industrial instruments represent a type of equipment which is relatively inexpensive and serve to contribute substantially toward reducing costs of production and toward increasing effective capacity of equipment already in use, thus obviating the installation of new machinery. As a safeguard against breakdown, instruments serve to reduce the volume of repair work. Through securing uniformity of operation, they help minimize the wear of machinery and extend its normal life. For instance, it has been estimated that the installation of rolling-mill pressure blocks, which were introduced about 1930, can save about \$45,000 in the repair and maintenance charges in a mill producing 400,000 tons of rolled steel per year. Again, it was found in a test case that boilers under hand control had to be rebricked every three months, while with instrument control no rebricking was required, even once a year.¹⁵

¹⁴ George Perazich, Herbert Schimmel, and Benjamin Rosenberg, *Industrial Instruments and Changing Technology* (WPA National Research Project, Report No. M-1, Oct., 1938).

¹⁵ "Maintenance of Automatic Control," *Chemical Age*, Vol. 32, No. 816 (Feb. 16, 1935), pp. 147-8.

In petroleum refining, cracking units a decade ago had to be cleaned and overhauled every four or five days; at present, runs of thirty to sixty days are common practice. The tremendous decline in maintenance and repair work on cracking units may be attributed

It is becoming a widespread practice in industrial establishments, before additional equipment is purchased, to analyze carefully the existing equipment with the aid of instruments in order to determine whether it is being used to its fullest capacity, with the frequent result that greater output is secured without the installation of additional machinery.

Many of the types of equipment referred to thus far depend for their proper functioning upon the use of electricity. The precision with which its application can be regulated and controlled makes the use of electricity basic to the development of, for example, continuous processes and automatic controls of production. The trend toward the substitution of electric power for steam power in industrial operations has thus continued after 1929.

Between 1930 and 1932 kilowatt-hours of energy distributed declined by more than 15 per cent, but thereafter they increased again, exceeding the 1929 level by 1935, attaining in 1936 a new peak 18 per cent above 1929 and another peak in 1937 which was about one-third above 1929. Those increases reflect also, in part, the extension of the use of electricity to such new fields as air conditioning and a variety of household purposes. The recorded rise in output of electric power was accompanied by a 50 per cent increase in labor productivity in the electric light and power industry. These increases took place without even remotely comparable increases in capital outlays. The capital expenditures for construction by the electric light and power industry (excluding federal projects) in 1936 and 1937 amounted to less than one-third and less than one-half of 1930 respectively.¹⁶

One of the factors reflected by this situation is the character of the quantitative expansion of the use of power; namely, the diversification of the demand with the resulting improvement of the load factor through the fuller utilization of existing generating capacity during off-peak periods. Another outstanding development in the power industry has been the growing use of the "topping" technique, whereby the exhaust steam from high-pressure, high-temperature turbines is utilized by being discharged into the steam headers of lower-pressure units. In this way it is possible to increase the capacity of existing stations from 40 to 90 per cent without an increase in fuel requirements and without corresponding additions to plant and equipment. Instead of replacing all of the obsolete units in the recovery years since 1933, replacement of certain key units was thus sufficient to secure the required modernization of equipment and expansion of capacity. "Topping" units represented more than 75 per cent of the total turbine capacity installed in the period from January, 1936, to May, 1937,

partly to improvements of materials used in present-day equipment and partly to greater precision in operation secured through control by instruments. (Field data of the National Research Project.)

¹⁶ *Survey of Current Business*, Vol. 18, No. 3 (Mar., 1938), p. 29.

in central stations using pressures of 1,000 pounds and over and about 30 per cent of all turbine capacity installed using pressures above 400 pounds.¹⁷

In the field of machine construction, improvements in the composition of metals, together with mechanical changes, have resulted in the past few years in increasing very substantially both the productive efficiency and the durability of the machinery, with a heavy decrease in capital requirement per unit of productive capacity of industrial equipment. The availability of free machining steel has been one factor. The introduction of chromium plating in tool and die making, as in the automobile industry, has been another.¹⁸ The life of various tools and parts is reported to have been extended from 3 to 20 times through chromium plating; moreover, the process imparts to them a great salvage value as they may be replated several times.¹⁹

A particularly significant development under way is the growing use of new material for cutting tools, first in the form of tungsten carbide, introduced into this country in 1928, and now tending to be replaced by a mixture of tungsten and tantalum carbides. The use of this material results in a tool of greater hardness, able to withstand the wear of high-speed machine cutting, with a great resistance to high temperatures. Introduction of these carboloy tools has brought about increased speed of operation, increased feed, and longer life between sharpenings.²⁰

The use of these high-speed tools calls for a heavier type of machinery. Their introduction therefore requires some changes of and additions to the basic equipment of the machine construction industry. Likewise, installation of new equipment is implied by the further development of automatic operations in machine building which has marked the past few years.²¹

On the other hand, there have been developments in machine construc-

¹⁷ Computed from *Power*, Sept., 1937.

¹⁸ Chromium plating had been discussed in 1928, but it was not until a few years later that it began to be applied on an extensive scale.

¹⁹ Mortimer Le Fever, *Abstract of Report on Technological Changes in the Motor Vehicle Industry and Its Effects on Labor*, unpublished manuscript, 1932; Joseph Geschelin, "Chromium Plating Cutting Tools Multiplies Their Wear Life and Saves Man-Hours," *Automotive Industries*, Vol. 66 (May 21, 1932), pp. 748-51.

²⁰ Thus on a brass-plug job the number of pieces that can be finished between sharpening was increased, through the substitution of carboloy tools, from 200 to 15,000 (*American Machinist*, Nov. 23, 1932, p. 1138). In work on phenol resins, carbon-steel saws must be removed and resharpened after cutting 60 feet of resinoid one-half inch thick; a 10-inch saw fitted with 14 carboloy teeth cuts approximately 10,000 feet of material without refitting, and its introduction permitted a daily volume of cutting larger than the monthly volume attained by former methods (*American Machinist*, Feb. 5, 1931, p. 234). In one automobile plant where 33 lathes were formerly used to turn and groove pistons, with 1 man running 3 lathes, the introduction of the carboloy cutting tool enabled the same production to be maintained with 20 lathes and 1 man operating 4 lathes. (*Preliminary Report on Regularization of Employment and Improvement of Labor Conditions in the Automobile Industry*, National Recovery Administration, Research and Planning Division, Mar., 1935, p. 8.)

²¹ The introduction of Keller automatic milling attachments, of power feeds, of station control, and of hydraulic chucking.

tion which serve to reduce the cost of machinery, to increase its productivity, to extend its life, and thus to bring about a decrease in capital outlays per unit of productive capacity. Instead of the foundry procedure where special patterns and cores are required for each casting, there is the growing substitution of welding methods which permit complete machines to be welded from ordinary steel plate produced on a mass production basis. An analysis of comparative costs of manufacturing of several types of jigs and fixtures showed that welding was from 12 to 29 per cent less expensive than casting.²² Although the cost of the newly developed welding machines themselves is still very high, the total capital investment for a welding shop is probably much smaller than for a foundry which could produce an equal number of the same types of machines.

Another tendency has been the substitution of roller bearings for the old-type friction bearings on a great part of the rotating machinery installed since 1930. This has meant increased speed of operations, greater durability of the machinery, and a reduction in total power requirements to drive recently installed machinery.

From a purely physical and technical point of view, the demand for machines to meet replacement requirements should be heavy, as the proportion of old and obsolete machinery in metal-working industries is high and has been increasing since 1929. The percentage of metal-working machinery which is over ten years old rose from 44 per cent in 1925 and 48 per cent in 1930 to 65 per cent in 1935 and 67.3 per cent in 1938.²³ A distinct revival of replacement demand actually did take place with recovery of production in 1936 and 1937. It was brought out, however, by a recent survey of machine-tool users which covered 251 plants employing over 200,000 workers in 1938, that out of a total of 11,610 machines purchased in those two years 4,666 were acquired for the specific purpose of replacing old ones and that they were substituted for 7,377 machines.²⁴ As those were years of increasing production in which nearly 7,000 new units were added, it may well be assumed that the total capacity of the machines used for replacement was at least equal to that of the machines which were scrapped, and it is altogether unlikely that costs per unit of capacity were higher for the new ones.

It was pointed out that one source of improvement in the construction of machines was chemical advances which resulted in superior composition and treatment of metals. Another wide range of chemical improvements resulted in speeding up processes, reducing waste, and increasing the qual-

²² G. L. Kluter, "Welding vs. Cast Iron Jigs and Fixtures," *Iron Age*, Vol. 135 (Jan. 24, 1935), p. 19.

²³ "1935 Survey of Metal Working Equipment," *American Machinist*, Apr. 24, 1935, p. 314; "Sampling Survey of Machine Tool Equipment," *American Machinist*, Apr. 20, 1938, p. 311.

²⁴ Philip E. Bliss, *American Machinist*, Apr. 20, 1938, p. 311 ff.

ity of products. These improvements were frequently accomplished without any capital expenditures or with relatively small ones. In the beet sugar manufacturing industry, for example, improved chemical processes contributed to the increased productivity of the plants, raised the proportion of the sugar extracted from the beets, and increased the capacity of the plants.²⁵

Improvements in paints, varnishes, and lacquers, as well as the development of corrosion-resistant steel alloys and plated steels, have contributed both toward the improved quality of the automobile and toward greater efficiency in its manufacture; the development of cellulose lacquers, for instance, has cut down the time required to finish a motor car (through reducing the drying time) from twenty-six days to a few hours, with a huge saving on inventories and storage space.

Where improved paints are used as protective coating for metals, these improvements have been quite significant in prolonging the life of various types of equipment, such as tanks, mixers, and the like. It is claimed that by using recently developed paints and new methods of application on metals, the life of the metals can be extended as much as 100 per cent.

In many branches of mining, chemical improvements contributed to substantial increases in the proportion of mineral content recovered per ton of ore mined. Improved concentration processes employing a variety of reagents²⁶ not only increased the output of minerals per unit of labor but made possible the utilization of inferior ores, increased the capacity of the mines, decreased the ratio of capital required per unit of mine capacity, and reduced the amount of power consumed per unit of product.²⁷

Chemical and biological improvements in the field of agriculture have contributed greatly toward the maintenance of yields in the face of blights and pestilence, the improvement of the fertility of the soil, and the development of disease-resistant varieties. Although the dollar and cent value of these improvements cannot be measured, it seems more than reasonable that the maintenance of production without the aid of these chemical and biological advances would have required very much larger capital outlays for the cultivation of larger acreages with consequent increased expenditures for structures, equipment, and power.

The results of chemical research are of course also responsible for the development of a large variety of new products. Many of these new products are, however, the results of the utilization of materials formerly re-

²⁵ Raymond K. Adamson and Miriam E. West, *Productivity and Employment in Selected Industries: Beet Sugar* (WPA National Research Project in co-operation with National Bureau of Economic Research, Report No. N-1, Oct., 1938).

²⁶ See *Statistical Appendix to Minerals Yearbook, 1935* (U. S. Dept. Int., Bur. Mines, 1936), pp. 48-9.

²⁷ For illustrations of some of the effects of chemical improvements in the mineral industries see the following WPA National Research Project reports done in co-operation with the U. S. Department of the Interior, Bureau of Mines: F. G. Tryon and Others, *Technology and the Mineral Industries* (Report No. E-1, Apr., 1937) and Haskell and Kiessling, *loc. cit.*

garded as industrial waste and frequently can be produced with very little additional expenditure for equipment, while some are produced with the existing equipment and result in little more than improved capacity utilization of the existing plant.

In addition to the mechanical and chemical advances mentioned, there has taken place a variety of changes which, for want of a better term, may be referred to as "managerial." Improvements of this class involve, as a rule, some measure of capital outlay in the way of additional installation or of adjustment of the existing plant and equipment. They may call for more or for less construction but not for a volume at all proportional to the result to be attained, since the better utilization of plant and equipment is the essence of improvements along these lines.

Improvements of this nature have continued throughout the depression. On the one hand, there has been further application of methods designed to increase the personal efficiency of the individual worker; the outstanding instance of this has been the greatly expanded use of the "labor extension" or stretch-out system in the textile industries. On the other hand, there have been continued improvements along the line of better organization of production. Thus, in the cotton-garment industry where practically no new machine developments have taken place in recent years and where the type of machine and the rate of operation have remained unchanged for many years, considerable savings in labor have been and are about to be effected through fundamental changes of factory layout.²⁸ In the automobile industry particularly, but in other manufacturing industries as well, improvements in plant layout appear to have been greatly stimulated by the depression, with resulting better continuity of the flow of work and savings in direct and supervisory labor, equipment, floor space, and inventories.²⁹

²⁸ Machine operation in this industry requires only 15 to 30 per cent of the total labor time, the remainder being devoted primarily to material handling. The change in the layout from the "bundle" system to the straight-line system is based upon the substitution of individual electric motors for shaft-driven machinery. This, together with an appropriate rearrangement of machines, permits an acceleration of the production process, a reduction in the amount of handling of work materials, and a reduction of inventories. N. I. Stone, "Systems of Shop Management in the Cotton-Garment Industry," (WPA National Research Project in co-operation with Bureau of Labor Statistics, U. S. Department of Labor, Report No. B-5, Aug., 1938.)

²⁹ The reconstruction of the Dodge truck-building plant in 1931, which resulted in a 30 per cent increase in efficiency, involved only the installation of some subsidiary and auxiliary equipment. Relocation of the final assembly line, enabling workmen on both sides of the line to have materials within easy reach, yielded a saving of 60 per cent in the costs of handling parts; installation of a chain conveyor on the assembly line saved 20 per cent in time and doubled the efficiency of the line; substitution of lacquering for enameling on truck chassis reduced the space needed on the assembly line for this work from 180 to 12 feet, with a saving in heat and space that more than offset the higher cost of lacquer, and practically eliminated the drying period; high-cycle electric tools replaced pneumatic equipment along the assembly line, with a gain in efficiency said to have been at least 25 per cent; instead of shunting freshly painted truck bodies and cabs to dry in the open air, an electrically heated drying oven was installed directly over the conveyor line, and this reduced the drying time from three or four hours to twelve minutes; an inside railroad freight dock was erected to receive incoming materials, which are then

In the mineral industries, too, continued improvements in ventilation and other conditions of work through the installation of auxiliary equipment have contributed to the recent increases in productivity.

There has also been a general tendency toward the installation of a variety of types of equipment designed to improve the utilization of existing plant facilities through the installation of attachments for making machine operations more efficient and more flexible. Such equipment is auxiliary to established production processes and requires small capital outlays relative to the economies achieved. Savings of capital are particularly marked when the increased capacity resulting from the installation of this equipment is sufficient to meet demands for increased production. Equipment of this type is, however, also frequently introduced during periods of low production levels when unit-cost reductions and economies in labor utilization are the primary objectives.³⁰ The economies in the use of capital may then be

picked up by overhead cranes and delivered to points along the assembly or subassembly lines, with a resulting protection of parts from ravages of the weather, elimination of storage requirements for parts, and saving in floor space which permits completed trucks to be stored inside the building. (*Iron Age*, Aug. 16, 1931, pp. 366-9.)

In 1933 Cadillac, by changing the layout and concentrating on one floor the production of all axles, motors, and transmissions, previously scattered on two, three, or four floors, was able to save enough space to bring in La Salle production as well, while leaving one floor vacant and to effect substantial savings in handling, supervision, lighting, and services. (John Buser, in *Factory Management and Maintenance*, Apr., 1933, pp. 148-59.)

In 1934 Packard, through changing the layout, cut nearly in half the floor space per unit of output and was thus enabled to vacate an entire building, which was made available for the production of a new line of cars. (Alvan Macauley, in *Factory Management and Maintenance*, Jan., 1935, pp. 4-6.)

Likewise, at a plant of the Western Electric Company a change in layout—substitution of straight-line for functional manufacture—resulted in a reduction of investment in raw materials and processing stock by more than one-half; of piece-part investment, by about 70 per cent; of floor space, by 17 per cent; and of manufacturing interval, by about 87 per cent. (R. H. Patchen, in *Factory Management and Maintenance*, Feb., 1934, pp. 47-52.)

At the Westinghouse plant in Pittsburgh the output of two departments was increased two and one-fourth and two and one-half times, with no increase in the labor force, through a rearrangement of the machines combined with the installation of some auxiliary equipment in the shape of conveyors and hoists or cranes. (C. G. Johnson, in *Factory Management and Maintenance*, Mar., 1934, pp. 114-6.)

³⁰ In the brick industry the most recent important technological change was the introduction in 1932 of de-airing equipment, which improves the quality of the brick, permits the use of inferior clays, reduces spoilage, increases fuel economy, and brings about a more economical utilization of the labor force. As the industry began to recover after 1933, new installations of machinery consisted almost entirely of these auxiliary and rather inexpensive devices; sales of de-airing equipment accounted for 80 to 90 per cent of the total sales of machine-house equipment to the brick industry in the years 1933-36. Other improvements along these lines involve increased electrification and such changes as the introduction of roller bearings into the machinery. (WPA National Research Project report on "Mechanization in the Brick Industry," in preparation by A. Van Tassel and D. Bluestone.)

In the cement industry increased productivity was achieved partly through changes in construction of grinders resulting in increased grinding areas and also through the introduction or increased use of equipment auxiliary to the kiln, of portable and highly flexible bulk-cement pumps, and the substitution of closed- for open-circuit grinding, with the use of air separators as a means of controlling the fineness of the product and reducing the cushioning effect of fine particles in the mill; the latter device has increased the mill capacity in some cases by as much as 25 to 50 per cent, while reducing power requirements by more than 25 per cent. (WPA National Research Project report on "Mechanization in the Cement Industry," in preparation by George Perazich and S. Woal.)

deferred to a subsequent period of increased production when the consequent increase in capacity may be utilized.

Another development has been the mechanization of conveying operations and of the handling of bulk materials. As an aid to large-scale mass production of standardized articles, the use of conveyors offers advantages which are manifold and often so substantial as to permit a rapid recovery of the initial investment.³¹ Where the conveyor functions merely as a means of mechanizing a handling operation, for instance when it is used for the moving of bulk materials in mines and factories, the primary benefit it affords is that of saving labor; however, even in these cases there are frequently some savings in initial investment costs as when conveyors are introduced as substitutes for such equipment as pit-cars, trucks, industrial railroads, cranes, and hoists.

Much more far-reaching are the effects of the conveyor system where it is used in the assembly and subassembly of parts, for instance in the automobile and the radio industries, and becomes the basic element of the continuous flow of production with all that that implies in terms of improvements of plant layout and management. Here the conveyor system carries with it a new subdivision of labor, a further automatization of operations, a new type of labor discipline, and improved efficiency and productivity of the workers all along the line. These results may also be obtained to some extent through the mechanization of processes other than assembly, as for instance in the underground mechanical loading and conveying of coal or other minerals. From the point of view of this discussion, however, it is important to note that the conveyor system and the continuous process in mass production industries permit these results to be achieved with an accompanying substantial reduction of capital costs per unit of output. Savings are secured in floor space, in inventories, in storage room, in machinery and auxiliary equipment and in costs of maintenance and repairs and through the elimination of waste, reduction of spoilage, and shortening of the time in process.

As an example of economies in the use of raw materials, the increasing efficiency with which industrial fuel is consumed has been among the outstanding technological developments of the twenties and these improve-

In the beet-sugar industry the increases in productive capacity required in recent years were attained largely through relatively small investments for improvements in chemical processes, accompanied by the introduction of such auxiliary devices as automatic controlling instruments and increased mechanization of terminal handling, both of raw beets and of the refined product, and by electrification. (Adamson and West, *loc. cit.*)

³¹ A survey, made in 1925, of a number of concerns which had installed conveyor systems in their plants showed that in 65 per cent of the cases repayment of investment costs was expected within three years or less. ("Survey of Industrial Handling," *Factory*, Vol. 35, Aug.-Dec., 1925, pp. 184-92, 254-64, 272-6, 369-73, 552-6, 750-3, 896-9; *ibid.*, Vol. 36, Mar.-Apr., 1926, pp. 441-3, 644-8.)

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³² Rail used by 119 pounds have reduced kilowatt-hour blast cement plants. These in the year Kiessling Project is No. E-5, ibid.

ments have continued after 1929 as well.³² Fuel savings have been achieved by the recovery and use of by-product fuels formerly wasted, such as coke-oven, blast-furnace, or refinery gases; by the use of devices for retrieving the heat formerly lost in stack gases or hot products and using it for preheating raw materials and air for combustion or for generating steam; by reductions in heat and power requirements through adoption of speedier and more continuous methods of manufacture; by the prevention of heat losses through insulation, seals against cold-air leakage, and by other devices; by improved techniques for more efficient transfer of heat and power; by more efficient generation of power through the use of the "topping" technique; and by the improvement of operating conditions with the wider use of control instruments.³³ A mere listing of the methods adopted indicates that the capital outlays involved must have been small relative to the savings achieved.

III

The technological changes discussed thus far do not, of course, represent an inventory of technological improvements of the last decade. They are, however, important developments which appear to have been instrumental in increasing the productivity of labor and in improving the productive capacity of plants and industries with relatively small outlays for capital goods. The concentration of demand for machinery and equipment requiring relatively small capital outlays and the marked decline in the capital-goods-producing industries since 1929 are, of course, characteristic depression phenomena. Students of the business cycle have long ago drawn the distinction between the types of technological change which tend to be introduced in the different phases of the cycle.

However, it is well to keep in mind two facts; namely, that technological progress continually aims at increasing the productivity of both capital and labor and that one difference between the effects of technological change on capital and on labor in a particular industry is that labor requirements per unit of product tend to decrease continuously while capital requirements per unit of product are at first increased, as manual operations are

³² Railroads, which are the largest single industrial users of fuel, have reduced the coal used by steam locomotives per 1,000 gross freight ton-miles from 174 pounds in 1920 to 119 pounds in 1936, or 32 per cent. During the same period, central electric power stations have reduced the use of coal and coal equivalents of other fuels from 3.04 pounds per kilowatt-hour to 1.44, or 53 per cent, the largest reduction among industrial users of fuel. Iron blast furnaces have reduced fuel used per ton of product by 15 per cent. Since 1919 cement plants have reduced fuel used per barrel of product by 15 per cent, and petroleum refineries have reduced the fuel used per barrel of crude run to stills by 24 per cent. These industries account for about two-fifths of the consumption of bituminous coal in the years 1919-35. (Nicholas Yaworski, Vivian Spencer, Geoffrey A. Saeger, and O. E. Kiessling, *Fuel Efficiency in Cement Manufacture, 1909-35*, WPA, National Research Project in co-operation with the U. S. Department of the Interior, Bureau of Mines, report No. E-5, Apr., 1938.)

³³ *Ibid.*

progressively mechanized, and then tend to decrease when detail improvements are made on the newly established basic processes. Furthermore, once an industry has gone through the basic transformations in its processes and the drastic downward revision in costs that they imply, rapid expansion of its markets and growth of production similar to that experienced under the stimulus of its technological revolution do not normally recur when its basic technology becomes relatively stable. Subsequent improvements of a detail nature may effect a reduction in costs of production substantial enough to result in further expansion of the market, but unless these improvements are accompanied by a sufficient increase in purchasing power in the hands of large bodies of consumers, the rate of increase of consumers' demand in response to those cost reductions will tend to diminish; the rate of expansion of the industry will be slowing down, and its outlay for capital goods will tend to serve increasingly for replacement rather than for the expansion of the physical plant of the industry.

As to the demand for replacements, its volume will in large measure depend upon the technological changes currently under way. Progress in technology which makes for greater durability or better utilization of plant, equipment, materials, or supplies will tend to limit the volume of replacement demand for capital goods—and much of the technological progress of our day appears to be along these lines.

It may of course very well be asked whether this is not a situation which is bound to develop in an advanced economy where the bulk of industries may be said to have reached a high and relatively stable technical level with room left for detail improvements only. Perhaps so. But the traditional association between technological progress and demand for capital goods was based upon the prevalence of a succession of revolutionary changes in basic industrial processes. We are now confronted with a situation where productivity of labor can be and has been increased in many ways through improvements which call for a less than proportional capital expansion. Thus the maintenance and even an increase of productive capacity can in large measure be secured with an actual curtailment of demand for capital goods. Under such circumstances an increase in the demand for capital goods becomes dependent on either the development and growth of new industries or the expansion of existing industries.

Indeed, new products and new processes are constantly being developed, and out of them grew in the past and may grow in the future new industries requiring large capital investments. In the period we have under consideration, organized industrial research was making rapid progress. The number of industrial-research laboratories in this country increased from fewer than 300 in 1920 to over 1,600 in 1931 and more than 2,200 in 1938; the personnel employed increased from about 6,000 in 1920 to over 30,000 in 1931 and over 40,000 in 1938; and the annual expenditures, from

about \$25,000,000 in 1920 to over \$120,000,000 in 1931 and about \$175,000,000 in 1938.³⁴

However, it should be borne in mind that the types of problems which are the subject of research in the industrial-research laboratories of today are designated largely by the entrepreneurs and not the technicians and that the technological developments which emanate from these laboratories are primarily designed to safeguard and improve the investment of the enterprises which finance the research work.³⁵ It is thus not surprising that industrial research has largely resulted precisely in improvements of the nature discussed in this paper; that is, improvements requiring lower capital expenditures per unit of capacity since they afforded better utilization of raw materials or greater durability of equipment. There is evidence, however, that the emphasis in industrial research has shifted from problems concerned with reducing costs to the development of new products and new applications of old products. New industries, like radio, air conditioning and mechanical refrigeration, and aviation and new developments in such industries as rayon and others have been an outgrowth of industrial research laboratories.

The emergence and growth of these new industries created new demands for capital goods.³⁶ So did some of the old industries which experienced a technological renovation. Such a renovating process on a scale almost tantamount to the rise of a new industry, with a heavy demand for capital equipment, is going on right now in the steel industry. Recent large capital expenditures in this industry are accounted for in part by the growing installation of continuous strip mills and the developments in stainless steel and

³⁴ WPA, National Research Project report on "Growth of Industrial Research," in preparation by George Perazich.

³⁵ In 1938 about 3 per cent of the companies reporting industrial-research laboratories employed 50 per cent of the total research personnel.

³⁶ The growth of the rayon industry has not been interrupted by the depression. Total annual production has more than doubled since 1929, as a reflection of continuous technical improvement. The quality of the product has been constantly improved. The success in producing dull-lustre yarns has aided in the extension of the market for rayon. New applications of the product have been developed. Costs of production have been cut about 50 per cent, and so have prices, as average output per man-hour has more than doubled. Lower-priced wood pulp has been displacing cotton linters as material in the viscose process, and continuous progress has been made in the recovery of raw materials, especially of acetone and acetic acid in acetate manufacture.

The growth of production has implied, of course, a heavy quantitative expansion of plant and equipment, mainly in the shape of new large-scale establishments. On the other hand, improvements in technology have not, in the past few years, of themselves involved capital outlays in proportion to the increased productivity attained, with the one exception of the continuous-process machines which are now, after several years of research and experimentation, beginning to be introduced into the industry. Otherwise, the cost reductions of the past few years have been achieved through refinements of detail in processing and spinning machinery, improvements in precipitating bath composition and in washing procedure, more accurate technical control, and the use of more uniform and purer materials. Large-scale production permitted mass-production methods to be developed and efficiently applied through improvements in plant layout and in planning and supervision of production and through the installation of larger-capacity equipment, with decreased capital costs per unit of production.

various alloy steels. Of the $8\frac{1}{2}$ million tons of the 1936 capacity of the continuous strip mills, $5\frac{3}{4}$ million tons are said to have been installed since 1929. The capacity available early in 1938 or then under construction was reported to be at 14 million tons.³⁷

Also, situations have developed which have favored the adoption of improved equipment hitherto used only on a limited scale. The spread of the loading machine in coal mining is a case in point. Mechanized bituminous tonnage increased from less than 2 million tons in 1923 to over 47 millions, or 13.6 per cent of the total coal output in 1935, and to 83 millions, or nearly 20 per cent in 1937.³⁸

The petroleum and natural-gas industry is one of the few extractive industries still in the process of expansion. From 1929 to 1934 drilling was limited largely to the more complete drilling of proved reserves. Beginning with 1935, however, drilling increased, and as it was more widely extended to new fields, there was a further notable expansion in 1936 and 1937. Since the demand for petroleum products is likely to continue to grow, increasing drilling activity is expected. It is estimated that, on the basis of the 1935 costs of drilling and equipping wells, the total expenditures for this work will amount to between $2\frac{3}{4}$ and $3\frac{1}{4}$ billion dollars during the next five years. Of this amount about $\frac{1}{2}$ billion will go to wages; of the remainder about half will be spent for derricks and drilling equipment and half for equipping wells with casing and with supplementary control apparatus.

To take another instance, conditions can well be imagined which may enable our railroad industry not only to proceed anew and on an enlarged scale with such improvements as electrification or the installation of automatic signaling and blocking, but even to undertake that vast program of modernization of repair work which was recommended by the Federal Coordinator of Transportation³⁹ and which would mean a revitalization of demand for capital goods from what was once one of its primary sources.

Or, as a development of a different order, we have had in agriculture a trend towards an increasing relative importance of the more intensive types of farming—dairy farming, truck farming, and fruit growing. The average investment per acre in buildings and equipment in 1930 was \$21 in dairy farming, \$26 in truck farming, and \$29 in fruit growing, as against \$8 in cash-grain farming.

However, all such developments, whether actual or potential, involving

³⁷ T. H. Gerken in "Continuous Sheet Mills—What They Mean to Costs and Competition," *Iron Age*, Jan. 2, 1936, p. 85; and H. J. Ruttenberg in "85,000 Victims of Progress," *New Republic*, Feb. 16, 1938, p. 37.

³⁸ WPA, National Research Project report on "Mechanization in the Bituminous Coal Industry," in preparation by F. G. Tryon and W. E. Hotchkiss. *Cp. Mechanical Loading and Cleaning of Coal* (National Bituminous Coal Commission, Aug. 30, 1938).

³⁹ Report on Consolidation or Joint Use of Railroad Major Repair Shops and Modernization of Repair Shop Facilities (June, 1936).

new opportunities for investment or revitalization of investments and of demand for capital goods, must be viewed as occurring against the background of the technological tendencies discussed in this paper and of the history of capital formation during the decade preceding 1930. Dr. Simon Kuznets showed in his study, *Capital Formation*, that even during the pre-1930 decade of rapid growth of industrial production, gross capital formation increased only as fast as the national income.

As to the quantitative expansion of the existing industrial plant, the fact that the early 1937 production in the manufacturing industries was approaching 1929 levels while capital outlays remained relatively low and much of the productive capacity of many industries remained unused makes it doubtful whether capital outlays greater than those of recent years can be expected in the manufacturing industries before earlier production levels are exceeded.

In the mineral industries, too, the existing plant is capable (with few exceptions, particularly the petroleum and natural-gas industries) of satisfying a sizable increase in demand for some time to come. Most branches of the mining industries work only 75 per cent of the year and at a rate which is considerably below capacity. Even a sizable increase in the country's production of goods requiring minerals as raw materials would not put sufficient strain on the existing production facilities of the mining industries to require capital outlays of the magnitude needed during the great expansion of mining between 1910 and 1920.

Unless current efforts to improve the condition of the railroads succeed in overcoming the problems arising from competition and their own financial history, the railroads cannot be looked to as a source for capital outlays in anything like the proportions they formerly contributed.

The telephone industry is one in which the growth of fixed capital has been traditionally at a faster rate than the increase in the number of telephones installed. Recent and current technical changes, however, such as the introduction of carrier-current systems or of the coaxial cable which provides a large number of telephone channels on a single metallic conductor, seem to open possibilities of increasing the capacity of the telephone plant with less than a proportional increase in fixed capital.

In the electric light and power industry, the recent new production peaks were achieved without remotely comparable increases in capital expenditures.

In agriculture, on the other hand, there still seem to be many opportunities for mechanization. During the period 1920-30, which includes the years of widespread adoption of automobiles, trucks, and tractors, the imputed value of all prime movers rose by about 400 million constant dollars or by about one-fifth. Yet in 1936 there were only $1\frac{1}{4}$ million tractors on farms or approximately one for every five farms; the same was true

of trucks; and about one-third of the farms still had no automobiles. The sale of such labor-displacing machinery as mechanical corn pickers was reported in 1937 to be so rapid that manufacturers had more orders than they could fill. The extent to which further mechanization in agriculture will constitute a growing demand for capital equipment will depend largely upon the prospects for increasing purchasing power available to farmers.

The problem of the relationship between current technological changes and the demand for capital goods thus seems to turn about the question whether or to what extent the current tendencies described in this paper will be offset by new opportunities for capital investment and consequently for increased employment. Should new industries fail to materialize in sufficient volume to demand large private capital outlays, a continued expansion of the demand for capital goods appears to be contingent on the assumption of large responsibilities by local, state, and federal governments to provide for the expansion of investment. Such expansion can take the form of large expenditures for public work projects and the development of capital facilities which tend to stimulate business enterprise, for instance, residential housing construction, roads, streets, sewage systems, airports, and rural electrification. These direct forms of expanding the demand for capital goods might well be combined with some means of changing the distribution of the national income so that large bodies of consumers may have enough purchasing power to require the physical expansion of existing industries.

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PUBLIC INVESTMENT IN THE UNITED STATES

By MORRIS A. COPELAND

Central Statistical Board

"Public Investment in the United States" or "Public Capital Formation" is less important than some have thought it. Chart I shows an estimate of the total annual investment in new durable commodities recently presented by Kuznets in his study of national income and capital formation.¹ The top line represents investment in new durable goods by both public and private agencies and by individuals—the total value of new improvements to real property and of new equipment and other durable commodities produced each year. The lower line on the chart shows acquisitions by all branches of government of new durable commodities including improvements to real property. Public works are distinctly a small part of total investment.

Before commenting further on this chart a word may be said on the meaning of the terms "public investment" and "total investment." There are several related concepts that need to be distinguished. The term "investment" is frequently used to designate the purchase of equities such as stocks and bonds. In various attempts to look at the economy as a whole, however, a different usage has developed. Acquisitions of equities in new wealth by individuals have come to be referred to as "savings"; acquisitions of new wealth as "investment." Should individuals acquire new wealth without a corporation as intermediary, that is "direct investment." This usage will be followed here.

The term "public investment" may refer to the value of the tangible properties owned by the various branches of government as of a given date, or it may mean new acquisitions of such properties during an accounting period. The term will be used in the latter sense, as equivalent to Kuznets' term "capital formation." It thus refers to a flow during a period—not to the stock of wealth at a given date. The curves on Chart I portray "gross investment" in new durable goods, or "gross capital formation." They include the new durable goods necessary to replace goods worn out and retired during the year. There will be occasion presently to refer to net investment, the excess of gross investment over retirement allowances.

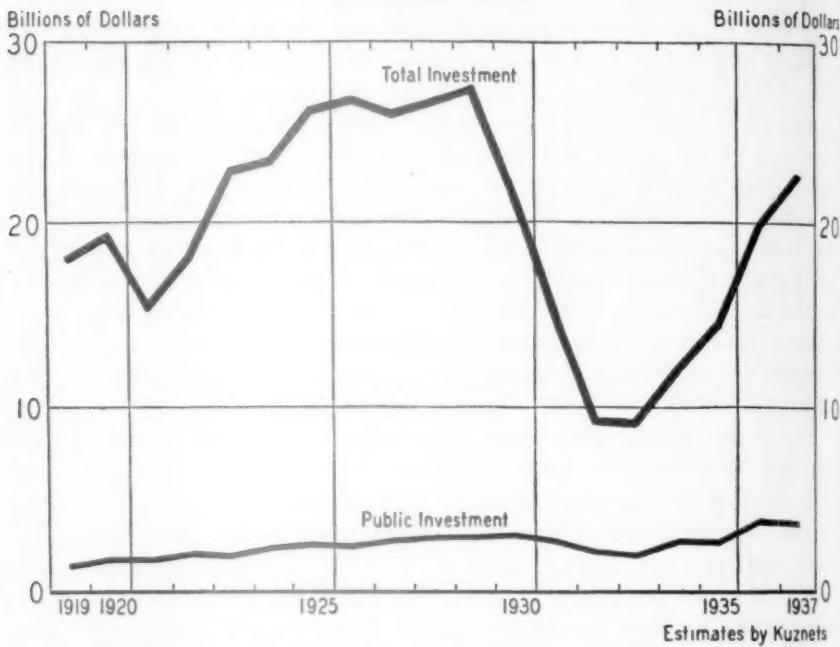
For the economy as a whole "new investment" is necessarily "investment in new wealth." But one part of the community may make an investment by purchasing some of the existing stock of wealth from another. There will be need shortly to take account of the fact that "investment by government" may be affected by transfers of wealth as well as by the production of new roads and schools.

¹Simon Kuznets, *National Income and Capital Formation, 1919-35* (1937).

For the present purpose it has seemed wise to portray on Chart I a total slightly less inclusive than Kuznets' "Total Gross Capital Formation" or gross investment. Increases and decreases in the nation's net external credit are not included because Kuznets has not attempted to allocate them as between government and private parties as investors. Increments in business inventories and in monetary gold and silver stocks have also been omitted from this chart. No estimates are available for government inventories comparable to those for the inventories of business, so that the present com-

CHART I

ANNUAL INVESTMENT IN NEW DURABLE GOODS IN THE U.S.



parison is perhaps fairer with inventories omitted. Additions to our gold stock have been omitted because their economic significance is so different from that of other forms of public investment.

With these considerations in mind, two facts may be noted in connection with the chart:

First, total annual investment in new durable commodities represents a substantial part of the total value of our national output. It was about one-third of the gross national product during the decade of the twenties. Gross national product is a more inclusive total than national income and a better measure of total business activity. It includes, as does gross invest-

ment, the durable goods produced to offset retirements. Durable goods are both a large item in this total and an item which accounts for a substantial part of business fluctuations in this total.

Second, when investment in new durable commodities by all branches of government is considered in a single total, it is clear that this total did not act as a counterweight to offset the decline in private investment following 1929. The chart minimizes the percentage fluctuations, but public investment declined more than a third from 1930 to 1933. And the subsequent increase was a small factor in the growth of total durable goods production. In order to evaluate the increase in public investment as a factor in business fluctuations, the increase of distinctly less than a billion dollars from 1933 to 1935 may be compared to wartime expenditures of over ten billion a year.²

Before proceeding to a more detailed analysis of the recent course of public investment, we may consider briefly its trend over a longer period. Unfortunately, data on the value of public investment before the War are scanty. While public investment in new durable goods is known to have risen well above two billion dollars during the twenties, it seems probable that it was less than half a billion in 1905.

For a long-term perspective there is need to reckon with one aspect of the case which figures relating to the value of output do not take into account. It is necessary to consider not only the volume of new durable goods acquired by government, but also transfers, either by gift or by sale, of the ownership of the stock of old durable goods as between government and private parties. In particular, estimates of public investment must include net acquisitions or disposals of land.

During the nineteenth century and well into the twentieth, paradoxically enough, the maxim, "The less government the better," was applied to our public domain with a result which involved a public policy that the followers of *laissez faire* can only class as an interference with the natural order.

The alienation of our public domain took primarily the form of homestead grants in exchange for nominal payments. This development represented in large measure a response to pressures arising in conjunction with the rapid development of the factory system. It did not reach its peak until shortly before the World War. The number of acres included in original homestead entries shows some slight tendency to increase in years following business depressions, but the relationship to the business cycle is far from close.

Nonetheless the homestead program was both politically and economi-

²In making this comparison it should be recognized that the increase of public investment expenditures 1933-35 is not the only nor the largest public expenditures increase which might be regarded as a stimulant to business activity. But our present concern is with investment expenditures—not with all expenditures.

cally a significant type of social legislation. Politically it was a response to social unrest. Economically it was a forerunner of much more than the recent efforts to foster "subsistence homesteads." It was a kind of public policy which contained the seeds of a wide variety of present-day measures designed to alleviate the hardships of depression—agricultural benefits, general relief in cash and in kind, mortgage assistance, unemployment compensation, work projects, and the encouragement of low cost housing. For each of these the earlier homestead policy offers a prototype in a simpler economic situation. The homestead policy involved a decrease of publicly owned assets; it represented a negative quantity of public investment. Modern expedients for depression relief have involved, instead, a recourse to public borrowing.

Without attempting to face the difficult problems of valuation of those properties which were formerly parts of the public domain but are now in private hands, we may perhaps conclude that if from the total purchases of new durable goods by government we subtracted the net decrease in public assets through the alienation of the public domain, the remaining figure would be extremely small around the turn of the century. Public investment was of negligible amount.

The more recent course of public investment in new durable goods, without allowance for homesteads, is shown in Chart II.

The estimate of total public investment on this chart is not entirely comparable with the Kuznets estimate on the first chart.⁸ On the one hand, a small part of the total represents purchases of sites. On the other, the list of durable goods included, other than improvements to real estate, is not quite so complete. Expenditures on highways represent more than half of the public investment total. (This item includes, in addition to construction of new public roads and streets, principally the annual expenditures on improvements of rivers and harbors.) Two other items of somewhat smaller importance are shown: capital expenditures for new schools and other educational purposes and capital expenditures on water systems and sewers. These three items together in 1930 accounted for about four-fifths of the total. Most of the balance was represented by public buildings and capital expenditures for armaments and the Navy. All these items are substantially noncompetitive with private industry. Most of public investment is still in a noncompeting category so far as private business investment is concerned.

The principal exception to this statement is too small an item to be

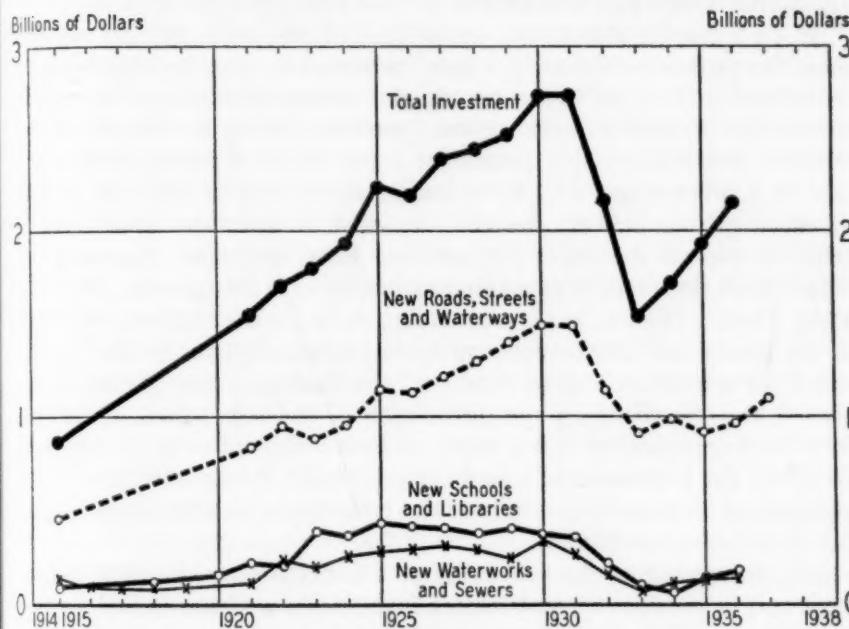
⁸ Highway expenditures are chiefly from the Bureau of Public Roads. Education expenditures are from the *Biennial Surveys* by the Commissioner of Education (with interpolations on F. W. Dodge data). Expenditures on water works and sewers and all other objects are from *Financial Statistics of States and Cities* and various federal operating reports. Several series were pieced out by use of *Construction in U. S. 1915-37*, Bureau of Foreign and Domestic Commerce (1938). Figures are for fiscal years and are consequently plotted at December 31.

shown—public investment in electric power. During the years from 1932 to 1936 when private investment was at a low ebb it may have been as much as 10 per cent of total new investment in this field.

We have questioned the adequacy of public investment as a counterweight to private investment for the stabilization of business activity, because it is so small a part of the total. But it would still seem desirable to use it as a counterweight for what it is worth. One frequently noted difficulty involved in so using it is the vast number of governmental units. It is

CHART II

ANNUAL PUBLIC INVESTMENT IN NEW DURABLE GOODS IN THE U.S.



not possible here to deal with this difficulty in detail. But the suggestion may be made that the concentration of public investment in a narrow field—highways, sewers, water works, and schools—is a partially offsetting factor in reckoning the possibilities of a better programming of public investment; i.e., such programming might focus more fully than it has so far on investments of these major types.

There are several respects in which public investment and private business investment resemble each other. It may be advantageous to enumerate some of the resemblances:

1. Three types of construction expenditure in connection with durable

goods need to be distinguished: (a) maintenance expenditures, which may be included in figures on construction contracts but are not properly chargeable to capital account;⁴ (b) gross capital expenditures; and (c) net capital expenditures (i.e., gross capital expenditures less the decrease in value of durable assets during the year because of depletion, depreciation, and retirement). Thus far we have considered public investment only in the sense of gross capital expenditures for new durable goods.

2. Gross new capital investment in durable commodities bears no necessary relationship in the case either of public or of private investment to the capital market. Rather a large part of such investment is financed without reference to the capital market—at least that part which is necessary to replace the portion of the existing stock of wealth used up during the period. This replacement capital expenditure is properly chargeable against the current year's operations.

3. To a considerable extent, in the field of private investment replacement has probably come to be a more important factor than net additions. According to Kuznets' estimates, on the average it amounted to nearly three-fifths of total business capital formation during the decade of the twenties and a still larger percentage since. There is reason both in the case of highways and schools to assume that a similar situation to that of much private industry has come to exist. Replacement investment is likely to become the major part of total gross investment. Our stock of automobiles is no longer expanding as rapidly as it did between 1900 and 1930. There is likely to be a corresponding decline in the relative importance of the annual net new investment in our highway system. As for the demand for schools, two facts stand out: the slackening rate of population growth and the changing age distribution of the population. These two facts have conspired to bring about what is estimated to be an absolute decline in the population of school age since 1930. Presumably this change indicates an increased importance of the replacement element in our future capital outlay on new schools.

Both in suggesting the possibility of a better timing of public investment and in considering replacement investments we have skirted around the question, "What criteria should determine the amount and direction of net investment?" Only a partial answer to this question will be attempted. Some economists have held that only to that very small portion of public investment which is competitive with private investment can we apply the criterion, "does it pay in dollars and cents," and that the rest is in the realm of public consumption, and that for this major part we must have recourse to some vague general criterion such as social utility.

⁴Maintenance expenditures have not been included in the figures shown on the chart. A good case might be made for doing so though it would be contrary to custom and there would be difficulty in achieving a uniform inclusion on the basis of existing data.

First, it is urged that the suggested contrast between productive investment and consumptive investment is too sharp. The does-it-pay criterion applies in varying degrees to different business investments. Its applicability to a railroad station is distinctly limited, not only because political and sentimental considerations may affect such an investment, but also because even a thoroughly conscientious attempt to determine whether a railroad station pays must be somewhat rough and ready. A somewhat similar rough-and-ready application of the does-it-pay criterion is both possible and, also, it is urged, desirable for a large field of public investment which includes post offices, roads and streets, and waterworks, and less clearly fire-fighting plant and equipment. For each of these, before deciding to invest, we may estimate the load for years to come and we may concern ourselves with laborsaving devices or economies of design.

Second, it is suggested that there is a type of public investment intermediate between the does-it-pay type and the consumptive type, a type which includes schools and many other public buildings. For this type of investment two factors may be recognized: (a) The decision to undertake a public activity such as education or policing or the administration of justice requires the provision of housing for the activity. The housing is a necessary incident of the activity. (b) The type of housing provided is an expression of our standard of living. The first of these two criteria plays a part somewhat analogous to the does-it-pay criterion in private business investment. The second is a factor in much of private as well as in much of public investment.

Third, there are still other types of public investment where the social utility formula is more apt—investments desired for their own sake. Parks, monuments, and works of art are cases in point.

In general, public investment falls at least approximately under one of three main headings: (a) investments which should more or less pay their way; (b) investments which are necessary incidents of public activities, chiefly the housing of these activities; and (c) investments which are wanted for their own sakes, such as parks. It is not suggested that there is any sharp line between "a" and "b" or between "b" and "c."

This comparison of public and private investment would be seriously incomplete if we were to omit to mention one respect in which public investment and private investment stand in sharp contrast. Capital asset accounting is universal today in private enterprise. In government it is practically unknown. Yet curiously enough government has seen fit to require such an accounting practice of private individuals.

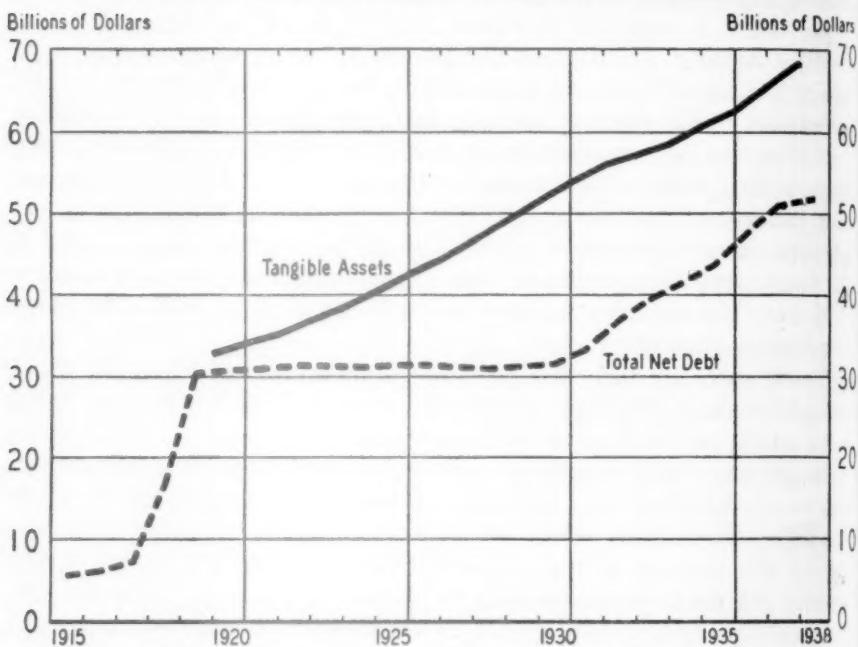
The reasons for adopting such asset accounting are twofold: (1) It is needed to allocate expenditures as between accounting periods so as to make it possible to determine the income or deficit of any period separately from other periods. (2) It is needed to show the financial condition of an

enterprise at a given date, i.e., its resources in relation to its obligations. Both these objects are, in my opinion, as important in our public business as they are in private enterprise. Under our present accounting we cannot know whether the government has really operated at a deficit or shown a surplus. Public borrowing to finance public investment is confused with an operating deficit.⁵ As a result the government is restrained from public investment at a time when such activity is needed to offset business declines.

In order to indicate roughly what such accounting might show, as to

CHART III

TANGIBLE ASSETS AND NET DEBT OF ALL BRANCHES OF GOVERNMENT



financial condition, Chart III is presented. The lower line shows the net debt of all branches of government.⁶ During the twenties the growth of state

⁵ Lack of such information has permitted important disagreement in estimates of national income. See *Conference on Research in Income and Wealth Studies*, Vol. II, Part V. On the need for businesslike government accounts in estimating national income see *Journal of Political Economy*, XL, Feb., 1932, p. 31.

⁶ This compilation was made by the staff of the Central Statistical Board and presented in a collection of charts known as the *Federal Chart Book*. The total net public debt equals (a) gross federal debt outstanding less the balance of cash, bank deposits, silver, gold and other assets in the General Fund of the Treasury, and less the face value of obligations of state and local governments owned by the federal government, plus (b) gross tax-exempt state and local government debt less sinking fund assets, as estimated by the Treasury Department. Figures on these various items as of June 30 are published regularly in the *Annual Report of the Secretary of the Treasury*.

and local indebtedness was practically offset by the decrease in the federal net debt. Since 1930 state and local indebtedness as a total has been substantially stationary and the whole increase has been in federal indebtedness. The upper line is an estimate made from two materials: (1) Kuznets' estimates of "Net Public Investment," and (2) a base in 1922 provided by an estimate of government wealth at that time, including principally the value of streets and highways as estimated by the Trade Commission, and the value of tax-exempt government real estate.⁷ The level of the curve is fixed by the base; its shape is fixed by Kuznets' estimate. The base for the asset estimate is certainly far from complete. The valuation of the assets includes no elements of write up or write down⁸ from one year to the next. On the whole the valuation of tangible assets is conservative. With these facts in mind, we may fairly conclude that there is an important residual equity in spite of the recent growth of the public debt.

The widening or narrowing of the difference between the two lines is a step toward indicating the annual surplus or deficit which a businesslike system of account would have shown if we had had one. It does not, however, take any account of federal investments in farms, homes, and private business through such corporations as the Reconstruction Finance Corporation, the Home Owners' Loan Corporation, and the Federal Land Banks. To take account of these investments raises questions of asset valuation chiefly in 1932, 1933, and 1934. There is also a valuation question in connection with the net debt curve, for it is affected in 1934 by the revaluation of our gold stock. Nevertheless, some very rough guesses may be hazarded as to whether the government's financial operating balance would have been positive or negative in recent years, if government accounts had been kept on a businesslike basis. These guesses will be made in terms of a consolidated financial statement for all branches of government taken together. Even on a double entry system basis, the government was probably operated at a deficit in five recent years. The largest operating deficit would have been in the fiscal year 1936, the year of the bonus; the next largest deficit, well under one billion, in 1932; smaller deficits would have been shown in 1933, 1935, and 1937. If we take the profit on gold revaluation into account 1934 would have shown a surplus, although the preferred accounting practice would be to show such a capital gain separately, and if this were done, an operating deficit would have been shown in 1934. In 1938, although the data are still incomplete, it seems probable that there would have been an operating surplus.

These are rough guesses. It is high time we kept our government books so that we can know where we stand.

⁷ "Some Problems in the Theory of National Income," *Journal of Political Economy*, XL, Feb., 1932, p. 42.

⁸ Allowance is made, however, for depreciation, or more strictly for retirement.

EXPANSION AND CONTRACTION IN THE AMERICAN ECONOMY

STEPHEN M. DUBRUL, *Chairman*

The following papers were presented at this round table: Oskar Lange, "Is the American Economy Contracting?"; Wendell D. Hance, "The Rôle of the Automobile Industry"; Waldo E. Fisher, "The Outlook for New Industries."

OSKAR LANGE read a paper on the subject "Is the American Economy Contracting" in which he presented a statistical analysis of the real national income over the period of the last several decades. His first approach was to adjust the reported national income produced for changes in the value of money through the use of the Bureau of Labor Statistics Index of Living Costs resulting in an adjusted index of national income in terms of 1929 prices. This was then reduced to a per capita basis. According to this analysis, per capita production in 1937 was about 20 per cent below 1929, which contrasted to the steady increase in the per capita real national income in the prior decade. It was also pointed out that the stagnation of the American economy since 1929 was accompanied by a serious decline in net capital formation. This was followed by an analysis of certain measurements of organizational efficiency of the American economy in which an index of labor productivity was presented based on the studies of Mr. Weintraub. The conclusions reached in the paper were that during the period 1929-37 the American economy was stagnant and probably slightly contracting relatively to the population; that as compared to the preceding period and during pre-War times, the organizational efficiency of the American economy had declined heavily; and that any prediction of the future of economic expansion in the United States must be based on a more detailed knowledge of the causes which checked the economic expansion after 1929.

The following summaries were prepared by the participants.

WENDELL D. HANCE: Economists have long discussed the rôle in general economic development of the rapid exploitation of innovations, especially those requiring immense amounts of capital. Some enthusiasts in looking at the comparative prosperity of the decade of the 1920's have pointed to motor vehicles, the most obvious feature of that prosperity, as the main cause. Actually, investment directly occasioned by the development and growing use of motor vehicles, although very large in the aggregate, was not predominant in the total of new investment in the period of so-called "plateau of prosperity," 1923 to 1929, inclusive. Rather, the automotive development of the period was one of several which provided opportunities for large aggregates of new investment.

In the seven years, 1923-29, something like 14 billion dollars of new investment in various directions occurred in direct consequence of or association with the development of motor vehicle transportation. Of this, roughly 3.5 billion dollars of net new investment corresponds to the increase in the stock of motor vehicles in existence, of which passenger cars accounted for almost 3 billions. New investment in motor vehicles and bodies and parts manufacture seems to have been about 1 billion dollars. In rubber tire and tube manufacture new investment was in the neighborhood of 200 million dollars. A figure of 1 billion dollars seems ample for new investment in industries selling their products to

motor vehicle and bodies and parts manufacturers. Net new investment in the petroleum industry in all stages to meet the increased demand for motor fuel amounted to 2.5-3 billion dollars. Retail trade and service, other than retailing of automotive petroleum products, required around 1 billion dollars of investment. The furnishing of roadway facilities may be estimated at a total of 3 billions urban capital outlay on streets—an equivalent of rural roadway construction which would have taken place with population shifts, in the absence of motorization.

We may compare this 14 billion total with the apparent new investment in other fields. The total increase (estimated) in value of fixed assets of class I railroads, electric and central stations, and telephone utilities in the period 1923-29 amounted to about 13 billion dollars. Net capital formation in the form of residential housing was 15 billion dollars, after deducting capital consumption from 31 billions gross capital formation. Practically all of the investment in these latter categories was private investment, whereas 37 per cent of the directly associated investment of the automotive development was public investment; that is, the investment in rural roads.

Unless the automotive development was really responsible for significantly large investment in housing, utilities, and other fields that would not otherwise have occurred, it is a presumption to state that the automotive development played a predominant rôle in the prosperity of 1923-29. However, it is the writer's impression that comparatively little of the investment in the great fields of housing and utilities, for instance, would be found to have been induced directly by the effects of motor vehicle development. As for indirect effects via the promotion of general prosperity, it is at least as easy to suppose that the enormous expansion in the use of motor vehicles can be attributed to the general prosperity induced by the great flow of investment in other directions.

With respect to the changing character of real investment outlets and the rôle of such great developments as those referred to here, two important points of view are of interest. The rapid developments held to be the driving force of capitalism are said to produce "maladjustments" or "distortions in the structure of production." The first point of view is concerned with this question. More concretely, to what extent does the development give rise to industries having only temporary high tides while the expansion is in full swing, levels of activity never to be even approached after the development has matured. The relevant consideration here is long-term variations in rates of gross capital formation.

The second point of view is the adequacy of investment outlets for new savings, and the effects of such great developments as that here in question in providing such outlets. In connection with this we are interested in charging rates of new investment and the ways in which financed.

With respect to changing rates of gross capital formation, it is convenient to refer to the principle of acceleration as a conceptual basis for the discussion. A long-run view and a more general interpretation than that utilized for purpose of business cycle theory, are intended here. Professor Frisch has shown how very many patterns of relationship between capital goods production and consumer taking may be subsumed under the acceleration principle when various rates of replacement are considered. With respect to gross capital formation a scrutiny of past and prospective rates of motor vehicle production indicates that the flow

of motor vehicles to consumers can be expected to be no less when demand is all replacement demand than when demand was entirely from new owners.

WALDO E. FISHER: There is a common tendency to overemphasize the rôle played by new industries in our national economy. General prosperity is supported on a very broad base and is the result of a whole series of technological, managerial, and economic factors and conditions which stimulate the growth and expansion of old industries as well as the development of new ones.

A canvass of new industries should include not only those emerging from the laboratory stage but also existing industries which have passed through the pioneering or developmental period of their history.

Low-Cost Housing. Recent developments indicate that the wide technical advances in production that have characterized the manufacture of clothing, automobiles, electrical products, etc., may be applied to residential construction and as a result may make good housing available to low-income groups. Costs can be expected to decline as house designs are simplified and perfected and as the application of scientific manufacturing and construction methods gain momentum. The standardization and prefabrication of parts, equipment, and units such as laundries, kitchens, bathrooms, closets, etc., will give rise to substantial economies. The four-house unit, that is, the building of four houses back to back, reduces the structural wall area and effects other important savings.

The commercial possibilities of shop-fabricated houses, designed and constructed in factories for assembly on building lots, are being explored by several hundred organizations and such houses are now being produced in small numbers. Their widespread adoption depends upon the willingness of the public to sacrifice traditional architectural designs and variety of treatment for convenience, comfort, and reduced prices and upon such factors as the co-operation that can be obtained from the building trades, the difficulty or ease of financing, and the modifications that can be made in existing building codes.

Aviation. The rapid strides made in airline service will probably continue. Those associated with the industry predict a ten-fold increase in the number of planes in domestic airline service during the next decade and a very considerable growth in transoceanic service over the Atlantic as well as the Pacific Ocean. Recent interest in extensive air armament will no doubt result in a manifold increase in military aircraft for our own and possibly foreign governments. Important among many notable developments in this industry has been the progress made in rotary aircraft, especially in helicopters. The perfection of rotary machines, it is believed, will bring a vast increase in private flying and will usher in flying taxis and commuter service because of the safety of rotating wing craft and the small space required for landings and take offs. Stratoliners for high altitude flying are now under construction. A substantial increase in air freight and express transportation is expected.

Synthetic Resins and Plastics. Resins and plastics give us "a structural material which comes from the mold bearing distinctly all its characteristic marks and requiring no further finishing cuts, polishing, or grinding operations; with metal parts molded in place; with intricate designs a possibility, as well as a wide range of color."¹ Plastics are used in the manufacture of silent gearshifts

¹ *Technological Trends and National Policy*, National Resources Committee, June, 1937, p. 290.

and insulation in industry and of a great variety of products including pens, pencils, ash trays, toys, jewelry, radio cabinets, and panels for rooms. Plastics differ among themselves in cost of production, adaptability to manufacture, and in their ability to take color. No general statement can be made as to where and when plastics will replace older materials. It is generally admitted, however, that the plastics industries are due for considerable expansion.

Air Conditioning. Complete and partial air-conditioning systems have had a growing market in recent years. During the three-year interval, 1933 to 1936, the value of equipment in use doubled and the number of installations in use increased about five times. The value of the equipment installed in 1937 was estimated to be 85 million dollars. The principal demand to date has come from commercial establishments, notably retail stores, restaurants, commercial offices, and theaters. Less than 0.25 per cent of the 22,000,000 wired homes have as yet introduced air-conditioning equipment. There is some difference of opinion as to whether the cost of systems using a refrigerating process can be materially reduced. A newer method of cooling by moisture absorption, not yet adaptable to small portable units, is said to be 25 per cent less costly. Air conditioning is expected to continue its rapid growth. For the present most of the demand will come from the commercial establishments. A mass market for comfort conditioning must await lower cost equipment.

Television. Technically, television has reached the stage where it can be introduced in this country. The principal difficulties facing television are those having to do with financing the stations, transmission, and programs, studio techniques, etc. For the first few years of television service, programs will probably not be financed by advertisers because the number of television receivers will be limited by technical conditions to homes in large cities and by cost to the relatively well-to-do families in those cities. Television cannot be expected to repeat the progress of radio, at least until radically new methods of transmission and new and cheaper types of receiver are developed.

Photo-Electric Cell. The electron tube of which the photo-electric cell and the vacuum tube are forms is said to be "the greatest invention of the twentieth century." The photo-electric cell can see more than the human eye and can make finer distinctions. With the aid of the vacuum tube it can provide automatic and precise control. There are hundreds of possible uses and new ones are being found from month to month.

Other Industries. Considerable expansion in the near future seems probable in rural electrification, agricultural machinery and equipment, Diesel engines, polaroid, nylon, slash pine paper and paper products, quick frozen foods, the Sterilamp, X-ray equipment, automobile trailers, miscellaneous electric products (fences, garbage destroyers, comforters, etc.), and synthetic wall boards.

The following seem due for expansion, although not necessarily in the immediate future: direct current transmission, high voltage generators, highway lighting, express highways, industrial alcohol, chemical tank farming for high-priced crops grown out of season, and artificially-lighted and soil-heated plants.

The following, still in the developmental stage, may have possibilities: the mechanical cotton picker, cellulose from dried cotton plants, infra-red devices for heating and cooling, artificial sunlight, invisible glass, and artificial fibres resembling cotton and wool.

THE EFFECT OF INDUSTRIAL AND TECHNOLOGICAL DEVELOPMENTS UPON THE DEMAND FOR CAPITAL

F. S. DEIBLER, *Chairman*

This round table session continued the discussion of the topic, "The Effect of Current and Prospective Technological Developments upon Capital Formation," which was presented at an earlier session by David Weintraub. The discussion was opened by Shelby Cullom Davis, who considered the question, "How Investment Decisions in Large-Scale Industry Are Made." Henry H. Villard followed with a discussion of "The Significance of Obsolescence and Depreciation upon Capital Formation," and Rollin F. Bennett closed the formal discussion by a consideration of "The Changing Character of the Risk Factor in Capital Formation." The ideas that were advanced are here presented in summary form.

SHELBY CULLOM DAVIS: Investment decisions of industry make the difference between booms and depressions. Of recent years the failure of industry to make prompt and adequate investment decisions has caused the government to enter the field through the TVA, PWA, USHA, and other, what might be termed, public investment agencies. In a large segment of industry, in fact in 50 per cent of the 100 billion dollars of net capital assets invested in corporations, the profit outlook has been such in recent years as to engender reluctance in making positive investment decisions. This segment comprises transportation and other public utilities and its nonparticipation in the investment decisions making for durable goods activity has been one of the major troubles of our economy.

Are the investment decisions of industry being slowed up by the growth within industry of a body of permanent officials—a bureaucracy? It would be difficult for a bureaucracy to survive save in a monopoly. Probably conditions are most fruitful for the sprouting of a bureaucracy as a corporation or industry approaches maturity. Seniority customs then have become well developed and the record of operations of sufficient long standing to justify the entrance of conservative money, savings institution money, bond money. Representatives of this money on the board of directors may serve to hamper an aggressive investment policy. The railroads may be the prime example of a mature industry of monopolistic status, in which conditions have been favorable to bureaucratic growth.

As the result of a recent survey of close to a hundred leading American corporations, conducted both by personal interviews and by correspondence, I find it difficult to believe that the growth of large-scale enterprise has had as a result the erection of a permanent bureaucracy which impedes investment decisions. The spirit of competition is inimical to the spirit of bureaucracy and competitive conditions force the elimination of bureaucracies where they do exist save, of course, in the monopolies. Sometimes the bankruptcy court is the unhappy ending of slow-moving bureaucracy in industry; sometimes a sweeping housecleaning job staves this off. Outstanding jobs of housecleaning have been performed in recent years on such corporate giants as U. S. Steel, U. S. Rubber, Montgomery Ward, International Paper and Power.

The background of investment decisions today, now that the strictly expan-

sionist phase of our economy has perhaps ended, seems to lie in the laboratory and engineering departments. The problem of investment decisions is to reconcile the results of research with the finance committee and the corporate treasury. Generally speaking, the stronger the influence of the finance committee the greater the lag in the investment decisions, whereas if the corporation is dominated by its research men, then investment decisions will flow very readily. Probably too readily for the corporation's good, but the economy as a whole will prosper from the increase in the velocity of money and from the experimentation. The growing institutionalization of research in the hands of large corporations puts an obligation on them to make available to society the fruits of this research by appropriate investment decisions in a prompt and orderly manner.

One of the significant investment decisions of the decade, the introduction of the continuous wide sheet and strip mill, was made first by the smaller steel corporations. The influence of conservative finance upon research or engineering advice is shown in the amounts which U. S. Steel's finance committee felt able to recommend compared with the amounts recommended by their engineers' survey: for 1929 this was 55 per cent; for 1930, 53 per cent; for 1931, 5.2 per cent; for 1932, 6.5 per cent; for 1933, 11.6 per cent; for 1934, 15.3 per cent; for 1935, 46.7 per cent; for 1936, 50.7 per cent; and for 1937, 49.3 per cent.

Although the automotive industry makes perhaps its most important investment decisions each year with regard to its new model, decentralization has been playing an increasingly large part. Labor has been instrumental in the investment decisions of the rubber industry to decentralize from Akron. Labor and transportation costs explain the migration of the textile industry to the South. The oil industry solved its problem of an overabundance of marketing outlets in an indirect fashion, illustrative of the way many investment decisions come about: the profitlessness of the early thirties put a stop to marketing expansion and caused abandonments and then when profits began to return, the various state chain store taxes caused the general adoption of the "Indiana Plan" of leasing or disposing of existing marketing outlets to employees. The chemical corporations must make numerous investment decisions just to stay in business, so progressive is the industry and so competitive the race.

Of recent years, probably due to the enormity of social changes that have taken place, the enterprise spirit has undergone a kind of cyclical retardation which may currently be bottoming out. Investment decisions have been impeded at the top by this retardation, often called "lack of confidence," although the laboratories and engineering staffs have been busy. There remain many new diversified processes and products to be capitalized upon, although no one of them may be as significant as the automotive or electrical equipment industries.

HENRY H. VILLARD: A distinction is made herein between the effect of allowances for obsolescence and depreciation upon capital formation in normal times and in depressions, when investable funds are in excess of investment opportunities. Normally the existence of depreciation allowances would increase capital formation on two counts. First, if depreciation allowances were paid out as dividends, it seems reasonable to assume that the recipients would not have been willing to save all such dividends; second, the availability of earnings for reinvestment, without the costs and the outside control involved in borrowing,

seems certain to increase investment over what it would have been had all the sums involved been borrowed. This conclusion is particularly true in periods of financial strain when borrowing is especially difficult, but it also applies in lesser degree in more normal periods.

During depression periods the allowances set aside for depreciation may not be invested—may not be used to purchase currently produced finished output. Instead the funds involved may be held in the form of cash, used to purchase previously produced output, or used to buy securities. The characteristic of all these types of expenditure is that they do not in themselves have any direct effect on current production. Thus depreciation allowances are similar to savings in the sense that the effect upon capital formation of a large volume of savings depends upon whether such savings are or are not invested. If all the money saved can be invested at favorable rates of interest, then the higher the level of saving the greater the formation of capital. But if a high volume of saving is not invested, then at some point an increase in savings will have either no effect or an adverse effect upon capital formation. In this connection what is true of savings is also true of depreciation allowances.

However, in order to avoid a discussion of the many factors which must be taken into account in any attempt to prophesy whether the demand for investable funds will in fact be equal to the supply, the remainder of this paper is confined to the effect of depreciation allowances on the supply of investable funds. It may be pointed out that maintenance charges are apparently identical with actual maintenance expenditures, so that such charges are most unlikely to add to investable funds. In fact, it is only for considerably less than half of capital consumption that depreciation allowances are provided, if we include consumers' capital, and just over half, if consumers' capital is excluded. In 1929 depreciation allowances amounted to only 5.5 billion dollars, while total capital consumption was around 14.5 billions.

Moreover, depreciation allowances actually provided do not appear to equal the economic depreciation of the capital they are supposed to offset. For depreciation allowances are to an overwhelming extent based on original cost, so that they are inadequate to maintain physical capital when prices are rising. Mr. Fabricant, in his *Capital Consumption and Adjustment*, has estimated that between 1922 and 1935 depreciation allowances set aside on the basis of existing accounting practice failed to equal the economic depreciation which actually took place by 11 billion dollars—a sum which was equal to 17 per cent of capital formation during the period. This was mainly due to the rise in prices associated with the War but was intensified by the continued rise in prices during the twenties. In 1932 and 1933, however, accounting allowances were substantially in excess of economic depreciation, while in 1934 and 1935 the two were about even. Whether this outlet for savings will again become substantial depends upon future price movements. It may be assumed that in view of the current monetary situation the long-run trend of prices will be definitely upward, so that this outlet is likely again to become important. In addition to the effect of rising prices, one must note that unanticipated obsolescence appears to have resulted in write downs which were not offset by write ups resulting from either excessive depreciation or rising prices, so that on these two counts current practice with respect to depreciation allowances contributes to capital consumption.

In considering the effect of depreciation allowances upon the supply of investable funds attention should be directed to the fact that both the depreciation rate and the depreciation base to which the rate is applied appear to be determined very largely by Treasury practice in connection with the income tax. The only change in this practice likely to have a major effect on allowances would be an attempt to revalue the depreciation base in such a way as to allow for changes in prices of capital goods, but the difficulties involved in such revaluations make it unlikely that many firms will attempt them.

The available evidence indicates that only in a very few cases—in one hundred out of six hundred in a sample studied by Mr. Fabricant—is the provision of depreciation related to the service or output which a machine performs. In the vast majority of cases depreciation is treated as if it were solely a function of time and depreciation allowances are based on the straight line formula or one practically equivalent to it. The effect of a change from straight line allocation to service-output allocation would be very great. For had the service-output method of allocation been used, Mr. Fabricant has estimated that depreciation charges at the bottom of the depression would have been only about 60 per cent of the depreciation charges which businessmen thought they ought to make at that time on the basis of straight line allocation. He estimates the dollar difference between the two methods to be more than two billion. Thus it seems that a change in the method of determining depreciation might mitigate to an appreciable extent the severity of depressions, by reducing the supply of investable funds at a time when such funds are already excessive.

In conclusion, the evidence shows the growing importance of depreciation allowances, which rose substantially as a percentage of the gross national product, gross capital formation, and net capital formation between 1919 and 1929, quite apart from an even sharper rise during the depression. Hence the problem raised by depreciation practice is of increasing importance not only on capital formation but on the economy as a whole.

ROLLIN F. BENNETT: The concept of risk must be a purely subjective one, if a theory of choice is to be based on it. As a means of defining risk quantitatively, we may attribute to each maker of economic decisions, a subjective probability distribution with respect to the future of each economic variable relevant to his decisions. The existence of such a distribution of probabilities may be demonstrated and its values determined by observing choices made between opportunities of gain—the probabilities involved in some of the alternative opportunities being known *a priori*. For the sake of simplicity, a probability distribution may be described in terms of its two principal parameters: the mean and the standard deviation. The mean is a measure of expectation. The standard deviation is a measure of risk, or uncertainty.

Although classical theory pretended to explain how investment decisions are most profitably made when expectations are known with certainty, such a theory is largely irrelevant and useless; and we do not know enough about behavior to enable us to determine exactly how the element of risk influences investment decisions. One fairly plausible hypothesis is that the element of risk inhibits investment in the same way that an increment in the interest rate would; and that the amount of inhibition depends not only on the magnitude of the risk

but also on the investor's willingness to bear risk.

In defining willingness to bear risk, we may say that a risk is borne at par if the action based on it is just what it would have been with the same expectation but no risk. When risk is borne below par, a premium is paid for risk bearing.

For example, to determine the premium paid for risk bearing on a second-grade bond, its price should be compared with that of a high-grade bond having identical expectation of payment—not with a high-grade bond having identical promise of payment. The comparatively high nominal yield on a second-grade bond is largely explainable by the discrepancy between the expectation of payment and the promise of payment.

Corporate organization facilitates risk bearing at a minimum market premium by permitting wide distribution of risk. The division of corporate capitalization into stocks and bonds further minimizes the risk premium paid in security markets by permitting specialization in risk bearing on the part of that section of the property owning class that is relatively willing to bear risk. It seems to me that the premium paid for risk bearing is so small that it has an almost negligible influence on capital formation, at least in the case of those profit expectations that are bought and sold in small packages, as are corporate securities.

If any trend is discernible in entrepreneurs' attitude toward risk bearing, it is largely due to an increase in the number of old and well-established companies controlled by conservative and bureaucratic managements.

Among the principal kinds of risk that are apparently decreasing in importance are: the uncertainties dependent on population movements and the discovery of mineral wealth; the risk of dependence on world markets; and the risks of obsolescence due to technological change. Although certain industries, such as the electric power industry, will be increasingly exposed to the risk of government competition, the result could scarcely inhibit aggregate capital formation, since it is capital formation by the government that gives rise to the risk.

There are three principal forms of risk that are apparently increasing: consumer demand, foreign demand, and cyclical fluctuations. Consumer demand is becoming less predictable because an increasing proportion of consumption consists of luxury goods subject to fads and styles and of durable goods whose demand is especially susceptible to unpredictable fluctuations for well-known reasons. Exports, though perhaps of decreasing relative importance, will have to flow in more risky channels if at all, since various kinds of productive machinery will apparently constitute an increasing proportion of our exports, and it will have to be sold, largely on credit, in places where capital is exposed to unusual risks. As for general business fluctuations, it can be plausibly argued that they are tending to become more violent. This need not imply greater risk unless the fluctuations are less predictable. But actually there is a close relation between business fluctuations and the efficiency of forecasting techniques used by businessmen. Violent fluctuations can occur only when there is bad forecasting. Bad forecasting is usually accompanied by lack of confidence, or risk. The most notable exception to this rule is the period of the late 1920's, when the "illusion of economic stability" prevailed, and when typically bad forecasting was accompanied by a spectacular lack of apprehension concerning the future. As a general rule, we may conclude that more violent business fluctuations will be accompanied by greater risks.

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THE ROLE OF PUBLIC INVESTMENT AND CONSUMER CAPITAL FORMATION

ROY G. BLAKELY, *Chairman*

This round table was devoted primarily to a discussion of the issues raised by Dr. Morris A. Copeland in his paper on "Public Investment in the United States."

GERHARD COLM, discussing "The Government as Investor," expressed his fundamental agreement with Dr. Copeland's suggestion to reorganize the public budget in a more businesslike fashion. Yet he believed that the notion of a government balance sheet in which assets and debts of the government are compared could be misinterpreted. Especially Dr. Copeland's Chart III might cause such a misinterpretation. Dr. Colm emphasized that there is a distinct difference between assets in private business and assets of the government. It is assumed in private business that the cost value of a machine, for instance, normally represents its earning power at the time of its installation. On the basis of this assumption assets are valued according to cost, minus depreciation. If the value of the assets at any time no longer corresponds to their earning power, a correction must be made. The assets of the government do not necessarily represent earning power. Therefore, the comparison of the value of all government assets with the debts in a businesslike balance sheet has not the same meaning which such a comparison has in a commercial balance sheet. The assets of government which could be compared to the total obligations represent the capitalized value of the power to draw revenue, especially of the power to tax. The question whether or not a government is overindebted can be judged only by examining whether or not there are still possibilities to tap new sources of revenues.¹

From this point of departure Dr. Colm suggested the analysis of investments according to their influence upon the power to draw revenue; that is, according to their fiscal productivity. He distinguished between: (1) profitable investments (for instance, in loans or self-liquidating projects); (2) fiscally productive investments (for instance, road constructions which may produce a higher yield of gasoline taxes); (3) indirectly fiscally productive investments (for instance, flood control, soil conservation); (4) fiscally nonproductive investments (for instance, armament, recreational educational investments).

He presented a statistical attempt to classify expenditures of the federal government and of various states and municipalities under this point of view.

After the discussion of the fiscal effect of "compensatory" spending, Dr. Colm suggested as a practical solution the elimination of quasi-commercial enterprises from the budget entirely as is already done in most cases and the division of the

¹Dr. Copeland used this separation of current expenditures and investments mainly in order to determine whether the government is operating on a surplus or a deficit. Dr. Colm questioned the validity of such separation, but became convinced by the discussion, that the distribution of expenditures over the useful life of durable goods is not unjustified even when such goods cannot be acknowledged to be assets in the proper sense of the word. This change in Dr. Colm's evaluation of Dr. Copeland's position makes Dr. Copeland's reply somewhat less pertinent than when given.

budgets into two parts: one for current expenses and one for capital outlays. He recommended, however, the exclusion of all expenditures for durable goods from the budget for capital outlays. Normally recurrent investments should be included in the current budget. Only large, long-run projects should be included in the budget for capital outlays. For the capital outlay budget, he recommended the practice which is prescribed by the charter of the city of New York. The budget of capital outlays there is voted annually for the next five years. In order to secure flexibility as it is required for pursuing a policy of "compensatory" spending, he asked whether it might not be advisable to leave the timing of these capital outlays to the discretion of the executive within the limits of the Congressional appropriation. He suggested that a committee representing all agencies concerned with business cycle policy should advise the executive on the timing of these capital outlays.

MORRIS A. COPELAND: Dr. Colm has raised objection to applying to our public finances the kind of asset accounting approved by accountants for business. His objection appears to involve the assumption of a much sharper distinction between the public service and private enterprise than I believe is warranted. Indeed, this assumption has two aspects. On the one hand, he argues that public investment (other than investments such as in private securities) is either only indirectly fiscally productive or else is not fiscally productive at all. The implication is that all private investments are clearly subject to the does-it-pay criterion. Thus he distinguishes sharply between a tax and a price as sources of revenue. Against this view I have urged that in both public and private investment the applicability of the does-it-pay criterion is a matter of degree and that in a much wider field of public investment than has commonly been supposed it is as applicable as it is to such a private investment as a railway station. The distinction between a tax (such as a water rate) and a price (such as a railroad rate) is not a sharp one.

The second aspect of the assumption behind Dr. Colm's objection to asset accounting for government is his view that in private business the prevailing basis of asset valuation is capitalized earning power. While it is true that a rough correspondence exists between the total value of all the assets of any enterprise and the capitalized earnings, after taxes and various other deductions, but before payment of interest, it does not follow that capitalized earning power is the basis of valuation of any individual asset item. For tangible durables the basis generally accepted by accountants is the cost of the asset less a reserve for depreciation which is computed according to a formula² adopted at the time of acquisition and which is computed on the basis of (a) the cost of the asset, (b) its present age, and (c) its life and (d) its scrap value as expected at the date of its acquisition. It is true that valuation readjustments may occasionally be made as to large assets subsequently to the date of their acquisition and in the light of subsequently acquired information; it is also true that such information may include data on earnings. But these exceptional facts hardly invalidate the applicability of the accepted rule of asset valuation for private enterprise to govern-

² The present argument does not depend on the use of any single formula, such as that for linear depreciation.

ment accounts. It is important to recognize that this rule is designed to avoid the assignment of the entire cost of an asset against the operations of the year in which it is acquired and to apportion that cost on some rational basis over the expected life of the asset. This apportionment of the cost of an asset over two or more periods through asset accounting serves two basic purposes. First, it makes it possible to determine whether there has been an operating surplus or deficit for any year considered as an accounting period separate from other years, and, second, it makes it possible to show as of the close of the year whether and how far the value of the resources of the enterprise not charged off against past operations exceeds the obligations of creditors; that is, the financial condition of the business in the usual accounting sense³ of that term.

I urge that Dr. Colm's objection to applying asset accounting to government finances rests on false assumptions.

Two questions of lesser importance were raised by Dr. Colm. First, why omit other pump-priming expenditures other than those involved in public works? My answer is that I was asked to discuss public investment, not all types of public expenditures. Second, why did I not treat the equity of the federal government in various credit corporations, RFC, HOLC, Federal Land Banks, etc., as assets. I did not include these assets on Chart III chiefly because they involved valuation problems too extensive for me to work out in detail in anything like the time at my disposal. I emphatically believe they should be included in a businesslike government balance sheet.

BEN W. LEWIS presented a paper on "The Government As Competitor" of which the following is a summary: We are concerned with the effect upon private investment of government investment in industrial fields already being served by private capital, with particular reference to the TVA. It is the "non-competitive" electric field, where for economic and physical reasons we have insisted upon regulated monopoly, that is being most dramatically invaded by government today. We may be sure that the competition will not persist, point by point throughout the industry for the same customers, permanently. The real issue relates to the effect upon private investment of the institution in selected areas of government production and distribution facilities.

Certain background considerations should be borne in mind: (1) The private industry being invaded has long since been regulated and has learned to digest restrictive, discriminatory government action; (2) the government is all-powerful and quite capable, legally, of destroying all competitors; (3) it may be desirable for the government to proceed even though the effect on private investment is adverse; (4) there is no reason basically to distinguish between government competition which is "uncertain" and "destructive" and government regulation which at its inception was similarly decried. At most only a tiny portion of the total investment field is affected or more than remotely threatened, and, incidentally, the government may come to tap the same capital sources from which private investment flows.

The effect upon private investment will depend upon the investors' under-

³Of course other asset-valuation may be made by accountants for special purposes such as liquidation.

standing of the government's objectives, its special capacities, and its tactics. Government objectives at best are bound to be uncertain.

It is to be expected that as the government enters the field there will be a retarding of private investment, at least at the outset. The private investor will be "afraid of what the government intends to do." The fear will persist if it becomes apparent that the government proposes to wipe out private industry by any means in order to achieve broad socialization of electric power. If it appears, however, that the government is trying to proceed solely on its competitive merits the effect on investment will not be essentially different from the effect of competition generally among private industries of varying efficiencies.

Finally, we should consider the situation wherein the government enterprise sets its rates as an expression of a standard of reasonable public or private utility performance, and by competition (subsidized or not, or possibly assisted only by special, natural governmental advantages) forces private industry to give the best performance of which it is capable. If the government succeeds in bringing out rate experimentation, aggressive salesmanship, lower rates, and increased consumption, it will produce a general increase in the investment outlets for private capital.

We know that additional electricity can be produced at lower unit costs, that lower rates will increase consumption, and that orthodox "administrative" regulation is costly, delay producing, litigious, and uncertain, and that it does not operate positively to reduce rates and encourage the extension of service. It offers no incentive to business daring of the kind common to competitive fields. Public competition has regularly accompanied, if in fact it has not produced, lower rates and increased use. A carefully planned, vigorously and intelligently conducted program of government competition can be made so to supplement regulation and to invigorate both the private electric industry and the state commissions and courts as to produce lower rates, widened use, and an increase in private investment. The effect on private investment need not be different from the effect which really good administrative regulation would have had.

C. O. RUGGLES discussed Professor Lewis' paper from the floor. In considering the competition of the federal government with private electric utilities, the social significance of the government's hydroelectric project must be taken into consideration. There are in the government's hydro projects enough purposes to be served that the electricity generated is bound to be, to some extent, a by-product. No power company, either public or private, which generates power as its main product can possibly compete with this by-product power of the government.

When the government is justified in developing such multipurpose projects, all private power facilities within the area affected should be purchased by the federal, state, or local governments and all competition eliminated. Our experience shows conclusively that it is a social loss to divide a market between two power companies that can be more economically served by one. This fundamental economic law is not altered merely because one of the projects happens to be publicly owned and operated.

The government competition in the power field without strict regulation of

both private and public projects is not likely to be on a sound basis or one that will be fair to investors. The profit motive is not limited to pecuniary gain but includes all sorts of political rewards as well. If public hydro projects are not regulated by a federal commission, they will be regulated by the President and Congress, and this, in turn, means outright political control. Such control will neither give these public projects an opportunity to succeed nor hold them responsible for reasonable results.

G. GRIFFITH JOHNSON, Jr., presented a paper on "The Effect of the Social Security Taxes on Investment and Consumption," a summary of which follows:

While the internal financial arrangements of the social security program may be in general as accurate as actuarial guessing can make them, nevertheless it is equally important that consideration be given to their broader effects on our economy as a whole. The effect of the pay roll taxes on investment and consumption is one such topic. The general conclusion seems to be that these taxes tend to be equivalent to forced savings and therefore to a curtailment of consumption, this opinion being derived from the supposed incidence of the taxes on wages and prices on the one hand, and from the use of the tax revenues to reduce (or to obviate further issues of) the federal debt on the other hand. A consideration of possible influences of the program on the independent savings of workers does not disclose any factors which appear to modify substantially that conclusion, nor is it likely that the gap between federal cash and budgetary expenditures resulting from the reserve accounts will induce greater deficit expenditures (except possibly indirectly through their deflationary effects) which might be considered as an offsetting expansion of consumption expenditures.

This reduction of consumption expenditures by the pay roll taxes is in line with the intended financial working of the program, and under the traditional analysis of the position of thrift in our economic system should stimulate the process of capital formation and future increases in the national income. This line of argument, however, ignores the situation with respect to investment demand; we cannot assume that an increase in investable funds itself induces a similar increase in real capital investment.

The stage of the business cycle largely determines what use will be made of the additional capital funds. In periods when the bases for expanding capital formation are lacking, these funds are likely to have no positive effect at all on the volume of real investment, but, on the contrary, the reduction in consumer purchasing power tends to contract whatever current volume of investment does exist. Theoretically, any addition to investable funds resulting from the security program is supposed to stimulate investment through lowering the rate of interest. While it does tend to lower a rate of interest, that rate is primarily the one on gilt-edged investments. Under conditions similar to the present, when a wide spread exists between the rates on safe and risky investments, reductions in the former are not proportionately transmitted to the latter, and consequently the increase in investable funds due to the pay roll taxes and reserve accounts merely tends to reinforce the efforts of our monetary policy to stimulate private investment by lowering the gilt-edged rate.

On the investment demand side, the effect of the pay roll taxes is probably

quite unfavorable. Consumption expenditures in recent years have had an important, if not controlling, relationship to the marginal efficiency of capital. While this is not an ideal situation, nevertheless so long as it exists we should encourage the maintenance or increase of consumer purchasing power. While hoping for a revival of the deepening process of capital formation, we should meanwhile protect the widening process and the demand for replacement expenditures. Federal fiscal policy has of late been the chief instrument to that end, and consequently any taxes or expenditures which operate in the opposite direction probably tend to depress investment demand under existing conditions.

Should investment demand in the future be detached from its dependence on the rate of consumption, the pay roll taxes plus the reserve accounts might have a stimulating effect on capital formation. However, it should be noted that this stimulus can never come through a favorable influence on the marginal efficiency of capital, but only through a reduction in the gilt-edged rate of interest which in turn is transmitted effectively to risky rates.

Due to the operation of the Unemployment Trust Fund, at times of large unemployment, benefit payments may exceed the total of pay roll tax receipts. Then the Fund would tend to maintain consumption expenditures, and would do so without involving the psychological handicap of a federal deficit, thereby bolstering investor confidence. This effect is substantially minimized, however, by the smallness of the benefits, the shortness of the benefit periods, and, in particular, the extended time lag before a net excess of benefit payments appears, if it does at all. Except for possibly an interval in the midst of depression, the program, because it is financed by consumption-reducing taxes, tends to exaggerate existing deflationary influences. The statistics with respect to the benefit paying states during 1938 illustrate this.

The conclusion is not necessarily that the pay roll taxes are bad. Policy recommendations should await a thorough reappraisal of the program as a whole, including a study of possible alternative methods of raising the required revenue.

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INCOME AND CAPITAL FORMATION¹

W. LEONARD CRUM, *Chairman*

The following papers were presented: "The Distribution of Consumers' Income and Expenditures," by Hildegard Kneeland; "National Income and Capital Formation," by Simon Kuznets; "An Analysis of Capital Formation as a Guide to Current Policy," by George W. Terborgh. Dr. Kuznets and Dr. Terborgh prepared summaries. Miss Kneeland's is not at hand.

SIMON KUZNETS: The first part of the report on national income and capital formation dealt with the share of capital formation in changes of the national product during the period from 1919 through 1932.² The changes were studied both for the long cycle from 1921 to 1932 and for the four reference cycles established by the National Bureau's business cycle study; and the most comprehensive measure of economic activity utilized was the commodity product, approximately defined as the value of all services embodied in new commodities (thus excluding the value of direct services to ultimate consumers). The main measure sought was the share that capital formation contributed to the rise and decline of the commodity product during the established periods of cyclical expansion and contraction in the country's economic activity. The analysis indicated that capital formation contributed to the conforming changes of commodity product during cyclical expansions and contractions a share appreciably greater than its share in the average volume of that product; also, that this greater relative intensity of participation by capital formation in the cyclical fluctuations of commodity product was more marked for the shorter cycles than for the longer swing from 1921 to 1932, more marked for the share of declines during contractions than for the share of rises during expansions, more marked for measures in constant (1929) prices than for those in changing (current) prices, and more marked for the share of net capital formation in the changes of net commodity product than for that of gross capital formation in the changes of gross commodity product. There were also significant differences in the relative intensity of participation in the cyclical fluctuations of commodity product by the various specific components of capital formation and of consumers' outlay on commodities.

The second part of the report presented an analysis of changes in the commodity product and capital formation for the years from 1932 through 1937, the period being treated as one of a single, complete cyclical expansion. The magnitude of the rise in commodity product during that period, on a per year basis and with adjustment for price changes, was appreciably greater than the per year rise either during the expansion from 1921 to 1929 or during the average expansion of the four reference cycles in the period from 1919 through 1932. To this rise of the commodity product, capital formation contributed a share relatively greater than the share contributed by it in the longer expansion from

¹This session is to be published in full by the Conference on National Income and Wealth Research.

²For definition of terms and detailed estimates for the period 1919-35, see *Commodity Flow and Capital Formation*, Volume I (National Bureau of Economic Research, 1938).

1921 to 1929 or in the average reference expansion; and a similar relative increase of share in the recent expansion, compared with that in the other expansions, was true of business capital formation (sum of flow of producers' durable commodities, business construction, and net flow to inventories) and of the total of private durable investment (sum of residential construction, business construction, and flow of producers' durable goods). There was thus no failure of real investment by business enterprises in the sense of an absence of a rise from the trough in 1932 as vigorous as the rise in the other components of the commodity (or of national) product.

However, in spite of the vigorous character of the rise from 1932 to 1937 the recovery by 1937 was still incomplete, in the sense that predepression levels were not re-established. On a per capita basis and in 1929 prices, the commodity product in 1936-37 was still from 4 to 9 per cent short of selected pre-1930 expansion levels; the shortage in gross capital formation and in net capital formation was somewhat more appreciable (from 9 to 12 per cent in the former and from 9 to 15 per cent in the latter). Total business capital formation, whether gross or net, did not show as great a shortage and in some comparisons was above predepression levels. But if net flow to inventories is excluded and residential construction included, the new total of private durable investment does show an appreciable shortage in 1936-37 as over against the expansion levels prior to 1930 (16 to 31 per cent on a gross basis, per capita and in 1929 prices). Residential and business construction accounts for failure of recovery in this particular total; and is present not so much because of the lack of a vigorous rise after 1932-33 but because of the extraordinarily severe contraction from 1929 to 1932. There are also grounds for treating the expansion from 1932 to 1937 as a short reference cycle expansion rather than that of a long swing; and to this extent one is not warranted in ascribing too great significance to the shortages shown at the culmination of the recent rise as compared with the levels in 1928-29 that marked the culmination of an expansion of a longer cyclical swing.

GEORGE TERBORGH: In appraising the current durable goods situation, we find ourselves dealing with what is essentially an inventory problem, the inventory being the stock of goods undergoing consumption in the hands of users. Estimated to have a reproduction cost now of 400 to 450 billions of dollars, this stock was growing so rapidly before the depression that the drastic curtailment of durable production since then has been reflected merely in a retardation of growth, rather than in an actual shrinkage. The total stock appears to be something like 10 per cent larger than in 1929, as against a gain of 35 to 40 per cent that would have resulted from the maintenance of the predepression growth rate. The actual growth has been largest in the inventory of public works, some 40 per cent, as against say 5 per cent each for producers goods and consumers goods. While the total stock has expanded by 10 per cent in terms of the amount of goods in use, its content of unconsumed services appears slightly below 1929.

It has sometimes been assumed that the durable production that would have occurred in the absence of the depression, but that in fact did not occur, has been merely postponed until a later occasion, pending which it constitutes a "backlog" of "deferred demand." Measured in these terms, the backlog is the equiva-

lent of about 115 billions of dollars, or, if we offset the amount by which durable goods consumption has fallen below its former trend, 90 billions. To "make up" the latter backlog, it would presumably be necessary that the future rate of growth in the durable goods inventory exceed that indicated for the same period by a projection of its predepression trend line. There seems no reason to suppose that we shall again reach that trend line, to say nothing of exceeding it far enough and long enough to make up this supposed backlog. The depression has seriously reduced our potential productivity as compared with that indicated by a projection of the predepression trend. Even apart from this factor it seems unlikely that we could finance the reduction of a 90 billion dollar backlog on top of expenditures to meet such needs for durable goods as would currently accrue in the absence of backlog curtailment. The backlog computed in this way is an illusion.

This is not to deny serious quantitative and qualitative deficiencies in the present inventory relative to the standards of a future prosperity. The inventory is relatively overweighted with aged and obsolete units. It has probably accumulated an unusual degree of functional maladaptation and geographical maldistribution in relation to prosperity demand patterns. It is in many cases quantitatively inadequate for prosperity needs. For the great bulk of durable goods, at least, the present inventory is such as to create a strong technical position. Given a prosperity level of general business, every important category except public works promises an output materially higher than the present one. This is in marked contrast to the situation in 1929, when some very important classes of durable output (most notably housing construction) were either declining or facing imminent declines regardless of the continuance of full or rising activity in the economy generally.

A strong technical position in durable goods generally does not in itself guarantee recovery and prosperity. It is, however, a fundamentally favorable factor of immense importance. It augurs an early and vigorous reinforcement of recovery, however it may be initiated, and contributes greatly to the vitality and duration of prosperity when it is achieved.

It is sometimes supposed that because of the accumulated deficiencies just cited we may expect an output of durable goods in the next period of prosperity much higher, relative to the output of non-durable goods, than before the depression, when no accumulated deficiency was supposed to exist. This is by no means a foregone conclusion. There have been many changes since 1929 in the efficiency with which existing goods are used, in the quality and durability of new goods, and in the willingness and ability of users to purchase new goods, all of which will have an effect on future demand. Some tentative estimates of mine indicate that if we were to attain full prosperity in three years the ratio of durable to total production would be, at most, no higher than in 1929.

In specific discussion of Miss Kneeland's paper Mr. Tucker asked how communities were sampled in order to make them typical of the areas. The response indicated that the makeup of the families was examined to test the typicalness of communities for places of the same size and in the same region. There was an attempt to select a variety of types of communities. Although the National Health Survey figures ran lower they checked largely as respects the percentage differences as among regions and the communities. Mr. Baker asked

whether the expenditure pattern of families above \$5,000 of income was obtained by a field survey. The response indicated that the field survey included very few families above \$20,000 of income but was apparently adequate up to that level. Above that level the results were obtained by extrapolation and for some communities and types the extrapolation began somewhat below \$20,000. Mr. Working inquired as to the basis of confidence in the expenditure patterns. The response indicated that confidence in the patterns was not based upon similarity to the Brookings study. Shifting numerical importance of different strata and types might change the national total. Data exist for 99 qualitative groups and the patterns for those groups can be weighted by new numerical data. Mr. King asked whether there was an objective basis for the evasion allowance. In response it was stated that the allowance rested upon a consensus of opinion of informed individuals. Mr. Dyason inquired whether it is possible to obtain an income estimate after exclusion of taxes and inclusion of benefits from government. This has a bearing on the definition of national income.

With respect to the paper of Mr. Terborgh, Mr. Merwin inquired why it is financially impossible to absorb the backlog. Mr. Tucker remarked that in addition to the financial difficulty there is a limitation on the absorption of the backlog because of an inadequacy of equipment available. Mr. Bell observed that the discussion had not brought out the importance of the concept of equality of investment and savings in relation to the business process. After remarks by Mr. Kuznets tending to narrow the objection to the backlog argument, Mr. Terborgh insisted that the backlog could not be measured and that any attempt at measurement involved an infinite projection. Mr. Fleming took the opposite view, holding that an infinite forecast is not involved. Mr. Judd inquired whether depreciation allowances were in agreement with life expectation of physical equipment, and the response indicated that corporation statements on depreciation are not a safe guide.

In the general discussion of all three papers, Mr. Anderson emphasized again that the lack of physical means of production may limit the output of durable goods. Mr. Gray remarked that interpretation of the record revolves about conditions as they actually exist, for example, the condition of large unemployment in 1937. In response Mr. Kuznets stated that the real issue is whether 1937 was the end of a cycle or a point of interruption in a long period of recovery. He called attention to the possibility that in some other countries at other times prosperity may have existed along with large unemployment. He dwelt at length upon the comparative levels of 1937 and 1929 and stressed the unprecedented scope of governmental action. Mr. McCracken observed the superiority of machinery now in use and inquired whether there was a long-time change in the rate of depreciation. If so, he wondered what bearing this might have upon the accepted views concerning advantages of the roundabout method of production. Mr. Hart referred to a paper by Mr. Weintraub presented at another Detroit meeting and suggested that that paper measured investment per unit of output rather than per unit of labor. In response Mr. Magdoff who has worked with Mr. Weintraub stated that the paper measured capital utilized per unit of capacity, found this capital requirement declining, and also found a slight decline in capital per unit of labor.

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PRICE AND PRODUCTION POLICIES OF LARGE-SCALE ENTERPRISE¹

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I

The current emphasis on price policy, as against price, as a proper object of study represents recent economic reflection on the significance of expectations, uncertainties, market control, and the position of price as one among many selling terms. Policy implies some degree of control over the course of events and, at the same time, the use of judgment as to the probable consequences of alternative lines of action. In perfect markets, whether monopolistic or competitive, price is hardly a matter of judgment and where there is no judgment there is no policy. The area of price policy, then, embraces the deliberative action of buyers and sellers able to influence price; that is to say, it covers practically the whole field of industrial prices.

The preoccupation with policy questions certainly indicates a trend towards an inclusion in price analysis of an increasing number of institutional considerations. Pursued to its Hamiltonian end² it implies not only an examination of the facts peculiar to each industrial market situation, but also a study of the conditions peculiar to each sale or purchase including what Messrs. Ford and Firestone dreamed in the night preceding the morning of their big tire deal. Particular circumstances may, indeed, justify so minute an investigation. It is submitted, however, that useful work in the field of industrial price policies requires a frame of reference of much greater generality. To the construction of such a frame of reference, which must take the form, I think, of a classification of market structures, recent theoretical work makes a useful contribution. It is, however, merely a starting point.

A firm may have a price policy by reason of the existence of rivals of whose action it must take account, of the desirability of considering the effect of present upon future price, of the possibility of its price in one market affecting its price in another, of the possibility of competing in other ways than by price, and for many other reasons. All these situations involve some degree of market control on the part of a seller or buyer. A position of market control, while a necessary, is not, however, a sufficient condition for price policy. In addition a seller or buyer must customarily conduct his operations by means of a quoted price. A dealer on an organized produce exchange may conduct transactions of sufficient magnitude to influence the market price. Yet if he buys and sells "at the market" it serves

¹The author is indebted to the Shaw Fund and to the Harvard Committee on Research in the Social Sciences for financial assistance in his work in this field.

²Cf. Walter Hamilton, *Price and Price Policies*, Sections I and IX.

no useful purpose to attribute to him a price policy. I limit the meaning of this term, then, to buyers and sellers who enjoy some degree of market control and who carry on their purchases and sales through the medium of a quoted price.³ Practically speaking this includes all selling transactions outside of agriculture and the organized produce and securities markets.

II

The size of a firm influences its competitive policies in a number of ways. In the first place the scale of its purchases and sales relative to the total volume of transactions in the firm's market is one indication of the extent of its market control. Taken in conjunction with other data it may throw a good deal of light on price and production policies. Certain authorities, on the other hand, brush aside figures on the relative size of firms as irrelevant and emphasize the decisive importance of the elasticity of the firm's demand curve.⁴ It would no doubt be extremely convenient if economists knew the shape of individual demand and cost curves and could proceed forthwith, by comparisons of price and marginal cost, to conclusions regarding the existing degree of monopoly power. The extent to which the monopoly theorists, however, refrain from an empirical application of their formulae is rather striking.⁵ The alternative, if more pedestrian, route follows the direction of ascertainable facts and makes use only of empirically applicable concepts.⁶ One such set of facts embraces the data relevant to concentration.

Secondly, the absolute size of a firm, as measured by assets, employees, or volume of sales, is also relevant to price and production policies. The scale of operations may affect the number and character of the factors that are taken into account in the determination of policies; it may also affect the way the firm reacts to given market situations. Selling practices at the disposal of the large firm may be beyond the reach of its smaller com-

³ R. F. Kahn ("The Problem of Duopoly," *Economic Journal*, Mar., 1937, p. 4) distinguishes the following "extreme cases":

"(a) At one extreme we have the case where, in spite of a change in a competitor's price, firms' prices remain constant automatically until they are altered as a result of deliberation or experiment. . . .

"(b) At the other extreme is the case where it is the volume of sales that automatically remains constant until some other decision is arrived at."

The first case is practically significant and embraces the whole range of industrial market situations in which sellers act through price quotations. The second case, however, is unrealistic. If price varies from moment to moment with changes in market conditions it is more than probable that sales (for an individual seller) will vary also.

⁴ Cf. A. P. Lerner, "The Concept of Monopoly and the Measurement of Monopoly Power," *Review of Economic Studies*, June, 1934.

⁵ Some theorists, pursuing their analysis on a high plane, refer to their work as "tool making" rather than "tool using." A "toolmaker," however, who constructs tools which no "tool user" can use is making a contribution of limited significance. Some knowledge of the use of tools is probably indispensable to their effective fabrication.

⁶ I should be far from denying, however, the value of theoretical speculation, even of a very abstract sort, in helping to ask the right questions of the data and in indicating the irrelevance of much factual material.

petitors. Large oil firms characteristically brand their gasoline and differentiate it from the product of competitors by extensive advertising campaigns. Small firms may, by reason of their size, be forced to sell an unbranded product at a lower price. In a society in which size is popularly considered a menace, the large firm must consider carefully the probable reception of its price and production policies by public opinion and political agencies. There is some evidence that the United States Steel Corporation for a considerable period of time viewed with favor its dwindling share in the national market and, through its price policies, "held an umbrella" over the heads of its growing competitors. Recent aggressive price tactics on the part of this company may indicate that it no longer regards such policies as politically necessary. If the market be considered to embrace all the factors external to the firm which habitually influence its competitive policies there can be no doubt that the size of the firm affects the scope and structure of the market.

The size of a firm likewise influences its reaction to given market situations. Economic analysis exhibits a disposition to treat the firm as a "profit maximizing" agency the action of which in the market is independent of its internal organization. The growth of corporate bureaucracies (with the consequent institutionalization of management decisions), the separation of ownership from control, and the growing influence of labor organization on policy making are all factors "internal to the firm" which may and do affect its reaction to market situations. One of the questions raised by these considerations is the meaning and importance of administered prices. To this question I shall return in a subsequent section.

III

Current consideration of price policy is apt to take either one of two quite different directions. One approach, associated with the theory of oligopoly and monopolistic competition, starts with various elements of the market structure of the individual firm and derives therefrom conclusions regarding the price and production policy of this firm. The other begins with an examination of the behavior of prices and through correlating various measures of price behavior with other measurable economic variables works back towards differences in the structure of markets in an attempt to explain the observed differences in price behavior.

The practical utility of the analytical method has been to focus attention on rivals' reactions as considerations in the determination of price and production policies and on the importance of non-price forms of competition. Whether the further elaboration of techniques of analysis yielding results of illusory exactness are useful is doubtful. The broad justification of this type of analysis must be that it provides a pattern of thought useful in separating data which are relevant from those which are irrelevant to the

explanation of price and production policies. Certainly numbers of buyers and sellers in the market and the possibility of product differentiation are relevant. No one would deny, furthermore, that the position and shape of individual demand and cost curves would be relevant if ascertainable.⁷ In the absence of such data, however, a realistic analysis of price and production policies may be unable to make much use of the constructions of recent monopoly theory.

A number of more specific strictures on the utility of this theory for price analysis may be offered. The static equilibrium assumptions implicit in this analysis rule out most of the considerations which are important for price policy. These considerations are in the main connected with industrial growth and decay and with the business cycle. The objection is not that monopoly theory is incompatible with an analysis that takes these considerations into account but that its constructions are irrelevant to the real problems. If we seek to build further on the existing foundation, the only part of that foundation which is likely to be found usable is composed of the ascertainable facts of numbers of sellers (and buyers) and product differentiation.⁸

Data on numbers, furthermore, tell us little regarding price and production policies unless there is further specification of market structure. Elaborate speculation on the probable behavior of A on the assumption that B will act in a certain way, seems particularly fruitless. It recalls Morgenstern's discussion of the dilemma of Dr. Moriarty when confronted with the alternative courses open to Sherlock Holmes.⁹ It should be a function of market analysis so to particularize as to reduce the area of necessary speculation to a minimum. The theory of oligopoly has been aptly described

⁷ However true it may be that businessmen have a roughly accurate notion of the shape of the demand curve with which they are confronted, at least within a limited range, it seems extremely unlikely that economists will be able by independent investigations to ascertain this shape except by the roughest sort of deduction from other data. In certain favorable cases demand curves for a product may be drawn statistically; for other products we are able to surmise that the demand curve is elastic or inelastic. Cf. J. M. Cassels, *A Study of Fluid Milk Prices*, p. 41: "Certain fairly definite conclusions about the character of the consumer's demand for milk can be drawn from a general common sense analysis of the factors involved." By taking into consideration such factors as numbers of sellers, product standardization, and others one can, in some cases, proceed from a rough knowledge of the shape of the product demand curve to a rougher guess at the shape of the demand curve for an individual seller.

⁸ Pigou would apparently deny that products for which substitution is not perfect can be in the same market. He defines the market at a "common nodal point" at which different units of an identical good are "available for purchase and sale" en route from the sellers' works to the buyers' home. Such a definition permits of a classification of markets only on the basis of numbers of buyers and sellers. (A. C. Pigou, *The Economics of Stationary States*, p. 78.) If different products are admitted to the market then the problem becomes one of (a) defining the group of products which are in the same market; (b) defining the geographical area within which buyers and sellers are in competition. It is on the basis of numbers and product differentiation that Machlup constructs his classification of markets, without, however, dealing with the question of how the geographical and product limits of the market are to be defined. Cf. Fritz Machlup, "Monopoly and Competition," *American Economic Review*, Sept., 1937.

⁹ *Wirtschaftsprognose*, p. 98.

is a ticket of admission to institutional economics. It is to be regretted that more theorists have not availed themselves of this privilege. If they had there would certainly be less of a disposition in the literature on the decline of competition to assume that in all markets dominated by a few sellers are to be found the same or similar patterns of price policy.

The statistical approach to price policy starts with an examination of price behavior and then proceeds to correlate various measures of price change with changes in other economic variables. Despite the recognized defects in price data, recent work along this line has made clear characteristic differences in the various groups of prices and has raised problems of admitted importance. Typically, however, this work exhibits certain weaknesses. First, it has been insufficiently recognized that, proceeding from the standard products of the raw material markets to the differentiated products of the highly fabricated goods markets, price as an index of the terms on which buyers acquire or sellers dispose of commodities tends to lose significance. The introduction of various forms of non-price competition and a proliferation of selling terms emphasize the necessity to take these considerations into account both in an analysis of sellers' price policy and in determining changes in the position of buying groups.¹⁰ Second, the measures of price behavior customarily employed are frequently much too general to serve the purposes to which they are put. This is conspicuously true of commonly used measures of price sensitivity. An all-purpose measure of price sensitivity or flexibility is subject to as many and as serious objections as an all-purpose index number. Price is a function of many variables and price sensitivity or flexibility acquires significance mainly as a relationship between price change and change in some one or more of these variables.¹¹ Prices may be sensitive to changes in inventories, demand, costs, and in other prices, or to changes in some of these variables and not in others. Third, the attempt to correlate measures of price behavior with other data such as industrial concentration and product durability on an economy-wide basis is apt to include irrelevant and exclude relevant determinants of price policy. It seems probable that empirical work will

¹⁰ In this connection it is necessary to distinguish between two quite different attacks on the validity of existing price data. It may be objected that the quoted price is inaccurate because it is not the price at which sales actually take place; e.g., the B. L. S. quotations on sulphuric acid were, during the depression, highly inaccurate since they represented unimportant sales to small purchasers while the bulk of the sales during this period were made at much lower prices to large industrial users. On the other hand it may be objected that the quoted price is inaccurate because it is merely one among many conditions of sale. In so far as the other conditions of sale cannot be legitimately reduced to price terms—and they usually cannot—this is not an objection to the validity of the price as such.

¹¹ Some of these relationships are, of course, much more important than others. I should be prepared to admit, with Lerner, Kalecki, and Dunlop that—at least for commodities for which price is the only significant selling term—the relationship between price and marginal cost is peculiarly significant both for analysis and policy. Cf. A. P. Lerner, *op. cit.*; M. Kalecki, "The Determinants of Distribution of National Income," *Econometrica*, April, 1938; J. T. Dunlop, "Price Rigidity and Degree of Monopoly," a manuscript to be published shortly.

achieve better results by a more intensive examination of specific market situations. In selected industrial markets a study of the relation between changes in costs, inventories, sales, production improvements and other variables, and the magnitude and timing of price change, may considerably increase our knowledge of price and production policies.

These strictures on current methods of interpreting price and production policies do not imply that analytical and statistical techniques are useless. On the contrary any classification of market structures designed to illuminate patterns of competitive policy must make use of them.

IV

It follows from what has been said that an adequate analysis of price and production policies requires consideration of (a) the influence of the organization of a firm on the character of the firm's reaction to given market situations; and of (b) elements of market structure which include many more things than numbers and product differentiation. It goes without saying that a realistic treatment of these questions necessitates the use of analytical tools which are amenable to empirical application. The problem, as I see it, is to reduce the voluminous data concerning industrial organization to some sort of order through a classification of market structures. Differences in market structure are ultimately explicable in terms of technological factors. The economic problem, however, is to explain, through an examination of the structure of markets and the organization of firms, differences in competitive practices including price, production, and investment policies.

A consideration of the relation of the organization of firms to price and production policies raises at the outset the question of administered prices. As currently used this is neither a clearcut nor a useful concept. In one sense it appears to relate to the methods by which a price is determined; in another sense to the way the price behaves. A price may be determined by administrative action; i.e., it may be quoted by a seller rather than determined by the higgling of buyers and sellers in an organized market. At the same time it may behave in much the same way as prices in organized markets. A manufacturer's price of cotton print cloth may be taken as an example. Furthermore the attempt to contrast administered prices with market prices obscures the fact that all prices are market prices in the sense that market considerations influence their determination.

There is, nevertheless, an important kernel of truth concealed in this usage, to wit, the fact that firms are not, regardless of what economic theory may suppose, undifferentiated profit maximizing agencies which react to given market situations in ways which are independent of their organization. The large corporation is a complex administrative unit in which control

frequently bears a very attenuated relationship to owners' interests, in which management is increasingly professionalized, in which the character of labor organization may influence price and production decisions, and in which at best a considerable area of important price decision must be routinized and delegated to subordinates. The result is that management, in the determination of price and production policies, is subjected not only to market pressures but influenced in its action by considerations internal to the firm.

The United States Steel Corporation, considering all the quantity and quality variations involved in adapting forty or fifty basic products to the specifications of its customers, is faced with the problem of setting some fifty thousand prices. While market considerations may, at one time or another, influence the relationships between these prices it is impossible to make independent decisions respecting prices with every change in the market situation even if such action were thought desirable. The result is that pricing on individual orders is delegated to price clerks armed with an elaborate book of extras and such specific directions as to its use as may be thought desirable. The International Harvester Company, in servicing its agricultural implements, manufactures and stocks some two hundred and fifty thousand separate parts. In pricing these parts considerations relevant to the organization and administration of the firm are probably at least as important as considerations relevant to the market situation.

The locus and character of control within the firm may likewise be relevant to basic price and production policies. The familiar contrast between a financial type of control primarily concerned with the conservation of assets and control by entrepreneurial types mainly concerned with expanding output and the firm's share in the market is doubtless too easy. Conservation of assets may necessitate an expansion of output and, after all, bankers called in to rehabilitate a declining firm have been known to advise price reduction as a remedy. Furthermore in those cases in which the supposed influence of entrepreneurial and financial attitudes are sharply contrasted, e.g., automobiles and steel products, the differences can probably be more adequately explained by market conditions than by considerations relevant to the internal organization of firms. Nevertheless it is true to say that organizations make men, as well as the reverse, and in the making of men policies are also made. During the recent flurry of price cutting in the steel industry the president of the Steel Workers' Organization Committee announced that if price cutting continued organized labor might be forced to take action since "price cutting always leads to wage cutting." The character of control and the action of control in the determination of policy—including price and production policies—is influenced not only by the pressure of labor but by many pressures arising from group relationships within the firm. These

relationships, furthermore, tend to influence the kind and caliber of men who are called to management positions in a concern.¹²

Economists have been singularly loath to investigate these semipolitical relationships within large-scale enterprise which influence business policy. Where business policies are recognized as running counter to what would seem to be rational action in the market the disposition has been to interpret them in terms of individual personalities. It was said that Firestone and Ford were sports in the sense of deviations from the norm of entrepreneurial rationality. Or again that what every industry dominated by a few firms needed was a Ford or Firestone by which it was implied that economic rationality in such situations would lead to production restriction and price maintenance but that these policies were prevented, with advantage to the public, by the anomalous behavior of such entrepreneurs. No doubt Messrs. Ford and Firestone set the impress of their personalities on the policies of their respective industries, but the larger problem for economists to consider is the impress of large-scale business organizations on the character and functioning of the management groups that are called to control positions.¹³

V

When we proceed from a consideration of the effect of the organization of a firm on its reaction to market situations to a consideration of the elements of market structure and their relation to price and production policies we are immediately confronted with the necessity of making clear the meaning of market and market structure. A preoccupation with logical elegance might lead us to define a market, with Pigou, as a nodal point at which a product, whose units are perfect substitutes for each other, are available for purchase and sale. Unfortunately, such a definition would effectively relegate

¹² Cf. J. A. Schumpeter, "Der Unternehmer in der Volkswirtschaft von heute," *Struktur Wandlungen der Deutschen Volkswirtschaft*, I: 303. In a "trustified" economy the performance of entrepreneurial functions is subject to a "mechanization and bureaucratization" of decision (*Willensbildung*). The type of business leader associated with large-scale enterprise tends to resemble the successful political figure, "a good minister, or bureau-chief." "The groups and interests who select the leader tend to agree on a compromise candidate—not always the man of highest ability. Even when the object is to find the 'best man' he may turn out to be not one who can run the concern but a man adept at manipulating public opinion and handling public relations."

¹³ The effect of the development of what may be called a professional management point of view on corporate policies is a question too frequently neglected. As an expression of that point of view, cf. Owen D. Young quoted in J. C. Sears, *The New Place of the Stockholder*:

"To whom do I owe my obligations?

"My conception of it is this: that there are three groups of people who have an interest in that institution [General Electric Company]. One is the group of fifty-odd thousand people who have put their capital in the company, namely its stockholders. Another is a group of well towards one hundred thousand people who are putting their labor and their lives into the business of the company. The third group is of customers and the general public....

"One no longer feels the obligation to take from labor for the benefit of capital, nor to take from the public for the benefit of both, but rather to administer wisely and fairly in the interest of all."

gate all the important and interesting problems to the area of intermarket relationships. An alternative would be to conceive of a market as an area in geographic and product space bounded, in Joan Robinson's phrase, by a gap in the chain of substitutes. Within such an area, however, assuming that it could be defined, the position of individual sellers and buyers may be very different with respect to the influences affecting business policy. These and other considerations suggest that, at least in the industrial area, the market, and market structure, must be defined with reference to the position of a single seller or buyer. The structure of a seller's market, then, includes all those considerations which he takes into account in determining his business policies and practices. His market includes all buyers and sellers, of whatever product, whose action he considers to influence his volume of sales.

The classification of market structures on the seller's side consists, then, in grouping together those firms, in whatever industry, which operate under the same or similar objective conditions.¹⁴ Among these conditions are the economic characteristics of the product: is it a producers or consumers good, is it durable or non-durable, is the product of an individual seller differentiated with respect to the products of other sellers in the same market or is it standardized? Another group of conditions relate to the cost and production characteristics of the firm's operation. The ratio of overhead to variable costs at given volumes of output and for given variations in volume of output, the flexibility of costs, locational factors, and the existence of joint cost are all important. A third class of considerations has to do with the numbers and relative sizes of buyers and sellers of whose action our given seller has to take account and with the relative ease of entry for new firms. Among the demand conditions which are empirically determinable may be mentioned the trend of sales, seasonal and cyclical fluctuations in sales, and, roughly, the knowledge possessed by buyers with respect to the quality and characteristics of the product. Differences in distribution channels provide another set of conditions of great importance for the policies and practices of a firm. The accurate specification and measurement of these and other market conditions with respect to an individual firm admittedly presents great, but not insuperable, difficulties. Properly used the available data should permit of an illuminating grouping of firms into classes exhibiting roughly the same type of market conditions. Under similar market conditions may not firms be expected to pursue similar policies and practices? A careful study of the empirically determinable differences in market structure may go far in explaining observable differences in policy and practice.

It may be objected that most of what are here called market conditions are already taken into account in traditional value and price analysis in much neater fashion. That is, at least in part, true in the sense that traditional

¹⁴The author is at present engaged, with his colleague, Professor D. H. Wallace, in working out a classification of industrial market situations.

analysis purports to focus the results of many policy determining considerations in the form of demand and cost curves which are, for different time periods and under certain qualifications, single valued functions of output. We can admit that if cost and demand curves for short, long, and intermediate periods were discoverable, rather than assumed, a large part of what is called business policy could be explained without resorting to so crude a device as a classification of market structures. It is, however, precisely because theoretical techniques of price analysis have been constructed without regard to their empirical applicability that such a classification is necessary as a first and primarily important step towards an understanding of business policies and practices.

Enough has been said to suggest that the size of firms is only one among many factors influencing price and production policies. It requires no more than a cursory examination to perceive that large firms confronted with different market situations pursue different policies and practices. In the automobile industry the existence of large firms and relatively small number of sellers was not incompatible with steadily falling prices which pushed the use of the product into lower and lower income classes until well into the 1920's. When large returns from price reductions seemed no longer possible automobile manufacturers turned their attention to accelerating the replacement demand for new cars by yearly changes in the design and structure of their product. By and large it probably continues to be true that a strong tradition exists in the industry to the effect that a substantial price reduction or an improvement of the product should be made in each year's model. The shift in emphasis from price to product competition may well have been the result rather of a change in the economic age of the industry than a change in the size or number of sellers. Although the price and production policies of the automobile industry are frequently contrasted with policies in the steel industry, may we not expect the former to approximate the latter as demand for motor cars becomes almost entirely a replacement demand and as product improvement takes increasingly the form of mere design or gadget changes? The economic age of an industry exerts an important influence on the policies and practices of firms in the industry. There is a widespread conviction among businessmen that aggressive price competition is an effective policy only during the period of an expanding market and that with a relatively stable or declining demand some type of controlled competition is in the interests of all sellers in the market. Controlled price competition is not a policy limited to large firms or markets in which sellers are few though, of course, numbers may be so large as to make effective control difficult.

In the steel industry price and production policies differ markedly as between products undergoing substantially the same fabricating process and sold by substantially the same firms. A striking example of a divergence

in price policies over the cycle is suggested by the behavior of the prices of automobile body steel as compared with the prices of galvanized steel sheets in the period between 1929 and 1937. Both of these products are made in the same kind of mill and the technological process is very similar. One, however, is sold to a few large buyers and the other to many small buyers. Automobile sheet prices declined more sharply from the beginning of the depression and at the bottom were 38.5 per cent below the 1929 level while galvanized sheet prices were only 28.7 per cent below 1929. On the rise since 1933, the price of automobile body steel went up more slowly than that of galvanized steel sheets. During 1937, the price of the latter exceeded its 1929 level by 6.2 per cent while the price of the former was still 12.8 per cent under its 1929 level.

In the rubber tire market four large firms sell around 75 per cent of the total volume and there are in the whole industry no more than twenty-eight firms. Yet price and production policies would seem to be quite different than in other markets, e.g., cigarettes, in which firms are large and the number of sellers are few. Consideration of the structure of the tire market appears to indicate that the character of distribution channels exerts a decisive influence on price policies. In the market for tires as equipment on new cars the sellers are confronted with buyers each large enough to undertake tire production himself if dissatisfied with the price. In the replacement market a number of different distributive channels induces a discount structure which facilitates price cutting on the slightest provocation. While the personality of Firestone, plus the fact that his firm is admittedly a low cost producer, has no doubt been an important factor, it seems probable that if Firestone, like God in another context, had not existed the structure of the tire market would have created him.

Another type of market in which the large firm has typically followed a policy of aggressive price competition is to be found in the field of distribution. Here the price we are concerned with is the spread between manufacturers' and retail prices. Forty or fifty years ago by all accounts the distribution patterns for most consumers goods sold at retail was highly standardized, with full-function wholesalers and retailers operating under a relatively inflexible mark-up system. The growth of chain stores and other types of mass distributors has probably contributed not only toward a lowering of the manufacturer-retail margin but toward making it more flexible over the cycle. This influence is likely to continue—unless checked by recent and prospective legislation—as long as mass distributors can acquire by aggressive price tactics an increased share of the available sales.

These examples seem to indicate that the price policies of large firms are apt to be influenced by the stage of economic development of the industry in which they operate, by the size of buying units, the character of distribution channels, and the possibility of obtaining an increased share of total

sales of a group of products. There are, of course, many other elements of market structure which affect business policies and practices. In consequence it seems doubtful whether any useful generalizations can be made regarding the price and production policies of large-scale enterprise without further specification as to the market situations which confront such firms.

It may possibly be true that a rough inverse correlation might be demonstrated between concentration as measured by percentage of volume of output of a product produced by a given small number of firms and, for example, some measure of amplitude of wholesale price change over a business cycle. Would such a correlation, if demonstrated, reveal an important fact regarding short-run price policy of large-scale enterprise? I think not. In the first place such a correlation would be heavily biased by agricultural products all of which exhibit low concentration and high amplitude of price change. Everyone admits that the structure of agricultural products markets is at once atomistically competitive and incapable of realization in industry. The principal problem we are concerned with is whether within the range of fabricated products there is a marked relation between size of firms and the type of price policy which is followed. In the second place the available price data for fabricated products is inadequate for such a comparison for two reasons. For many products there is a marked discrepancy between B.L.S. prices and average net realization per unit of sale reported in other sources,¹⁵ a discrepancy which varies considerably over the cycle. Furthermore, it is probably true to say that, in general, the more highly fabricated the product the less important is price as a comprehensive indicator of the terms of purchase and sale. That is to say, a study of price behavior would have to be supplemented by an examination of changes in product and selling terms.

As another example of the difficulty of establishing a relationship between size of firms and price policy through an examination of price behavior, consider the recent history of construction materials prices. Thirty-five B.L.S. prices of construction materials were higher in January, 1938, than in 1929 or 1926; twenty-one prices, on the other hand, were lower at this date than the wholesale price index. An examination of these prices fails to indicate any well marked influence of size of firm. Among the high priced products were structural steel, wire nails, cast iron pipe, and teme plate, all produced in industries in which a small number of firms produce a large percentage of output. On the other hand the high priced products included cypress lumber, shingles, yellow pine and maple flooring, and common building brick produced in industries in which the typical firm is

¹⁵ Bureau of Mines and Bureau of Census figures. In part this discrepancy and the changes in discrepancy are the result of nonreported price cuts, in part of changes in the complex structure of a commodity price which are not adequately represented in the reported price; e.g., the B.L.S. price for men's shirts is the relatively stable price of a high grade trademarked product. The sale of this shirt fell off markedly during the depression in favor of lower priced and frequently unbranded shirts.

small. Among the low-priced products were wallboard, glass, sewer pipe, and a number of porcelain products fabricated by large firms in industries with high concentration, and, on the other hand, a number of products typically produced by small concerns. It is difficult in this instance to discover any pattern of price behavior which would throw light on the relationship between size of firm and price policy.

The relative size of a selling unit, to recapitulate, is one element—doubtless a very important one—in the structure of a firm's market. As such it exerts an influence on the policies and practices of the firm. But firms of given size, relative to the extent of their markets, will follow very different price and production policies in different market situations. Differences in the character of price response to given changes in the cost or demand conditions facing a firm or group of firms is to be attributed both to differences in the internal organization of the firm and to differences in the structure of the market in which the firm, or group, is placed. An analysis of the relation between organizational and market differences and the character of price response is the central problem of price analysis. The relation of size to price policy is merely one part of the problem which, taken out of its setting, is not very amenable to fruitful discussion.

VI

In conclusion a few remarks may be offered on the relation of price analysis to public policy. A consideration of the consequences of different types of price response to changes in costs and demand for the functioning of the economy is the prerequisite to effective public action in the price area. These consequences can be usefully divided into two groups:

1. The effect of differences in price responses on the distribution of economic resources among different uses. This is the traditional monopoly problem. A monopoly position is supposed to lead to restriction of output and of investment in the monopolized area below that which is desirable and attainable with a greater degree of competition. A whole range of problems, therefore, centers around the effect of price policies and price relationships on the distribution of economic resources as between various uses.
2. The effect of differences in price response on continuity in the use of resources already invested or available in different uses. This is primarily a business cycle problem. It is frequently maintained that certain types of price response to changes in costs and demand conditions are more favorable to continuous employment than others. The second group of problems, therefore, turns around the effects of different types of price policy and behavior on the continuity of employment of economic resources.

The argument, for both groups of problems, runs from differences in market structure to differences in price response, and from differences in price response to the consequences of these differences for the functioning

of the economy. Proposals for public action, therefore, must consider, first, what types of price behavior and price policy are most conducive to an effective use of resources, and, second, within what limits appropriate public action is likely to be able to influence price behavior.

Although a good deal has been written both on the effect of restrictive policies on the distribution of resources and on the effect of price policies on fluctuations in employment and output, very little has been done to formulate tests of undesirable price behavior applicable to public action. Specifically, what sort of tests are indicative of the existence of a price sufficiently high to restrict output and investment below desirable levels? What types of price behavior in industrial markets would be likely over the cycle to promote a fuller use of economic resources?

Without attempting to answer these questions attention may be called to three issues of immediate importance in the price field facing economists interested in public policy.

First, is it desirable that during periods of business upturn and downturn prices respond readily (in ways that can be roughly specified) to changes in costs, sales, or other variables of determinable magnitudes? If not for all commodities, for what groups of commodities should prices be flexible?

Second, should certain types of price behavior, the use of price formulae, or particular price policies be accepted as *prima facie* evidence of violation of the antitrust acts?

Third, is price competition ever sufficiently ruinous to justify public action? What are the tests of ruinous competition and what type of public action is appropriate?

In so far as the price and production policies of large-scale enterprise provide a proper field for public action, these are critical questions.

CHANGING DISTRIBUTION CHANNELS

By WILLARD L. THORP
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Along the process whereby raw materials are transformed into commodities in final consumers' hands, there are many functions which inevitably must be performed, regardless of the nature of the economic organization. Economists frequently summarize them as the creation of form, time, and place utilities. These are by no means the same for all products or for all consumers. Financing the consumer by the installment plan has not yet been extended to cigarettes, nor do all automobile purchasers pay as they ride. The importance of style and design, so dominant in the millinery industry, has not yet emerged with equal force in the case of oyster packing, and bread seems to require more advertising than butter.

Assuming such variations to exist, it remains true that for any particular raw material-to-product sequence, there is nothing inevitable with regard to the location of the various functions within any existing pattern of economic enterprises. The entire process may be under a single control, as in the case of the farmer who optimistically sends eggs direct to customers by parcel post. It may be round about and subdivided among at least a dozen intermediaries, as in the case of transforming raw cotton into a house dress. Often there are many channels all in simultaneous operation—a single manufacturer of rubber tires may sell to wholesalers, to mail-order houses, to a filling station chain, to large fleet buyers, to independent retailers through his own wholesale branches, to his own retail stores, and direct to his own employees.

A consideration of changing distribution channels must record not only the continued contest among the various routes to the consumer but also the shifting location of functions along the different channels. Advertising, for example, may be undertaken by the manufacturer, by a co-operative arrangement between him and the retailer, or by the retailer himself. Inventory may be carried at any of several points. The function of determining the retail price may, through the operation of resale price maintenance contracts, be shifted from the retailer to the manufacturer. In the case of state laws establishing minimum prices or mandatory mark-ups, even state legislatures have taken a hand in what has historically been a function of the retailer.

The complicated character of present-day distribution is the result of the many interrelated forces which make our economic system dynamic. Since the operating unit of retail trade can be no larger than its trading area, the growth of cities and the development of automobiles and roads have been fundamental to the rise of large store units. Mass production has created national markets while the development of large-unit products, particularly

the so-called consumers' durable goods, has encouraged many specialized types of selling. Merchandising has appeared as an art and competitive pressure resulting from excess productive capacity has made "selling" the concern of every businessman. Not only have economic forces been exceedingly active but the various interested parties engaged in the struggle for survival have turned to the authority of government for aid, and more and more the problems of distribution are becoming the concern of our legislators. During the last decade, it is probable that more legislation relative to the processes of distribution than of manufacturing has been added to the statute books and survived court scrutiny. The battle of the channels is a national issue.

At the present time the ultimate consumer purchases from retailers about 90 per cent of the commodities which he buys. Another 5 per cent is obtained directly from manufacturers; about 3 per cent from farmers; and the remaining 2 per cent from wholesalers, importers, and other intermediaries. A very small fraction is purchased directly from fishermen, coal miners, and the like. Direct purchases from manufacturers, while small in the total, are important in a few fields such as bread, ice, ice cream, newspapers, corsets, window shades, and, of course, brushes. By and large, however, the overwhelming dominant channel to the consumer is via the retailer.

The real diversity in channels appears in the interval between the manufacturer and the retailer. The traditional double-play is manufacturer to wholesaler to retailer. The break with tradition is the shift to a direct flow from manufacturer to retailer with either or both absorbing the necessary functions of wholesaling. Warehousing, for example, has sometimes been undertaken by the manufacturer in the establishment of wholesale branches; in other cases, mass distribution such as the chains has established central warehouses for servicing their own outlets. From the point of view of retailers, the picture disclosed by Census data for 1929 indicates that somewhat near 25 per cent of all commodities sold by them were purchased direct from manufacturers, about 68 per cent were obtained from wholesalers, including manufacturers' wholesale branches, and the remainder was divided fairly evenly between purchases from importers, miners, and farmers, and purchases from other retailers.

The most elaborate recent information available on channels of distribution is found in the Census blue-book, *Distribution of Manufacturers' Sales*, which data were collected concurrently with the 1935 *Census of Manufactures*, and compiled and published as part of the *Census of Business*, 1935. The record covers about 38 billion dollars of so-called distributed sales, omitting intra-company transfers. Sales negotiated by agents or brokers are classified according to purchaser. For our purposes, the subdivision can be reduced to three groups: (1) sales to wholesalers and jobbers; (2) sales which by-pass the independent wholesalers and move through

manufacturers' wholesale branches or direct to retailers; and (3) sales which by-pass both wholesalers and retailers, moving directly from the manufacturer into industrial or household consumers' hands. Thus, for 1935, the Census report indicates that wholesalers and jobbers took 26.5 per cent of the total of manufacturers' sales. The direct channel to retailers accounted for 41.6 per cent, of which sales through manufacturers' wholesale branches accounted for slightly less than half. (It should be noted that to the extent to which these wholesale branches sell to independent wholesalers or to ultimate consumers, this figure is too high and the other components are too low.) Finally direct sales by manufacturers total 31.9 per cent, the bulk of which went to industrial and institutional consumers. Manufacturers' sales to household consumers, included in the above figure, were reported as 2.1 per cent and sales through their own retail stores at 1.7 per cent. These last items are undoubtedly too low, inasmuch as for individual industries the Census Bureau found it necessary to combine one or both with some other item in the industry report "to avoid disclosures of individual operations," and they were not unscrambled in calculating the national totals. On the basis of these figures it would not be unreasonable to guess that, in 1935, at least one-half of manufactured goods sold by retailers reached them without passing through the hands of independent wholesalers. The percentage varies, of course, by lines and among the various enterprises in each trade.

Of even more interest than the extent of the various channels is the question of the direction of recent trends. Records of manufacturers' sales were collected by the Census Bureau for both 1929 and 1935 and comparative totals were presented in the 1935 Census report, based upon industries which represented about three-fourths of the total value of distributed sales in 1935. While the underlying data give every evidence of presenting an accurate picture, industry by industry, close examination indicates that the summary figures are open to some question. For our purposes, they cannot be used because they are weighted according to the sales by each industry in each year, respectively, and thus reflect shifting industry importance as well as changing patterns in each industry. More important, however, is the fact that groupings to avoid disclosure were frequently different in the two years, but no correction was made to achieve comparability. Finally, some groups, such as iron and steel, showed general averages which are so widely at variance with the individual industry components as to suggest that comparable coverage was not perfectly preserved. Unfortunately, therefore, the Census summary cannot be used for the purpose of measuring general shifts in the channels of distribution. Using the same basic data new calculations have been made based on the ninety industries for which a complete breakdown was given in both 1929 and 1935. They include 57 per cent of the total distributed sales by manufacturers in 1935 and therefore cannot be used to measure the actual level of each channel, but rather for the purpose

of measuring change. Although the necessary calculations were rather elaborate, the results can be summarized in brief space:

DISTRIBUTION OF MANUFACTURERS' SALES, 90 INDUSTRIES

	Unweighted 1929	Unweighted 1935	Weighted 1929	Weighted 1935
Wholesalers and jobbers	37.3%	33.2%	29.4%	26.3%
Retailers' and manufacturers' wholesale branches	36.4	40.2	46.5	49.9
Direct to users or consumers	26.2	26.6	24.1	23.8

The unweighted averages regard the ninety industries as ninety cases of equal importance, while the weighted averages weigh each industry in both years according to its 1935 distributed sales. The two sets of indexes suggest identical conclusions. The change in direct sales to users or consumers is negligible, moving up 0.4 per cent in the unweighted figures and down 0.3 per cent in the weighted. However, both measures show a definite shift in the direction of increased by-passing of the independent wholesaler in behalf of direct sales to retailers. Wholesalers lost 4.1 per cent by one index and 3.1 per cent by the other. Retailers gained 3.8 per cent by one and 3.4 per cent by the other. The importance of such a change is indicated by the fact that a transfer of 1.0 per cent from one group to the other means 400 million dollars of business. One might therefore make a rough and unwarranted estimate that the indicated shift from 1929 to 1935 for all manufactured products may be in the neighborhood of 1.5 billion dollars of sales per year.

Such summary figures fail to disclose the variety of pattern recorded by the ninety individual industries. Wholesalers increased their activity in twenty-one industries and lost ground in sixty-nine. The cases of wholesaler gain are usually specialty industries—biscuits and crackers, confectionery, oleomargarine, shortenings, vinegar and cider, fur felt hats, candles, writing ink, buttons, cigars, window shades, and the like. The most important instances are petroleum refining and rubber tires. Sales to retailers and wholesale branches gained ground in sixty-six cases, were unchanged in one, and declined in twenty-three. The greatest gains in direct sales to retailers appear in the textile and leather products fields. Direct sales to consumers and users were more nearly balanced, rising in forty-seven cases, holding even in two, and declining in forty-one. The most frequent combination, as might have been expected from the indexes, is the decline of the wholesaler and the rise of direct sales to retailers.

Although it is not one of the ninety industries included, I cannot help but call your attention to the extraordinary record of the malt industry. In 1929, half its product went to industrial users, while one-quarter went to wholesalers and jobbers, and the other quarter to retailers. In 1935, 99.0 per cent of the malt output went to industrial users, 0.8 per cent to wholesalers, and 0.2 per cent to retailers. Thus, even constitutional amendments rechannel the processes of distribution.

Distributive channels are not easily changed. Business institutions are subject to inertia and a change in marketing policy is not something to be taken lightly. Existing customers of a given type are always more comforting than potential customers of some other kind. Probably the incentive for the rise of direct-to-retailer selling has not come so much from the manufacturer as from the increasing importance of a new class of customer. Undoubtedly, a leading factor in this record of shifting channels has been the rise of the mass distributor. I do not wish to suggest that the term "mass distributor" is synonymous with chain store systems. However, I shall confine my further remarks to that aspect of mass distribution.¹

It is easy to summarize the growth of chains up to 1929. The chain-store population grew at an amazingly steady rate. Except for the War years, when the rate was appreciably accelerated, the annual increase in number of chain outlets proceeded neatly along a compound interest curve, doubling in number about every six and one-half years. Wearing apparel chains increased more rapidly in number, while grocery chains increased somewhat less rapidly. However, this last fact was more than offset by the extraordinary expansion of the Great Atlantic and Pacific Tea Company, which increased from 10.8 per cent of all chain outlets in 1914 to 30.9 per cent at the end of 1925. After 1925, the rate of expansion in the established fields noticeably slackened, in some degree due to the slower growth of A. and P. However, the rapid development of the filling station and automotive accessory fields supported the trend. The discovery of the chain store field by investment bankers also led to many consolidations in the late twenties. Up to 1929, the picture was one following exactly the Malthusian formula for natural increase of population—a strictly geometrical progression.

Since 1929, the picture has been much less clear-cut. Despite further increases in the automotive group, the 1933 *Census of Distribution* recorded a net reduction in chain outlets of about 7,000, contributions to the decline being made by nearly all lines, the largest by the grocery field. This was the first break in the upward trend which had been so amazingly constant since the beginning of our records. Neither of the earlier depressions of 1908 or of 1921 had even made a dent in the rising trend line. The situation was reversed between 1933 and 1935, the total remaining almost constant for all lines except for chains of filling stations, which were reduced by 17,000, or nearly one-half. The recent years have seen the steady expansion of chains in the women's ready-to-wear group, the automobile accessory and tire fields, and in certain specialty fields such as bakery products and dairy products.

Data are available for the number of outlets operated by certain of the larger chains. For thirteen of the leading chains in the grocery field, three

¹ For evidence introduced in this section of my paper I am indebted to the "Chain Store Study," of the Federal Trade Commission, the various censuses of distribution, the compilations of Hugh Foster, and the records of Dun and Bradstreet, Inc.

reached their peak in number of stores in 1929, two in 1930, five in 1931, and the last three in 1932. The decline in A. and P. from its peak is reported variously from 750 to 3,000 stores. The next twelve food and grocery chains which total 19,222 stores at their various peaks had reduced their outlets to 15,846 at last reports, a decline of 18 per cent.

Chains in the limited variety field, however, show no such trend. In eight out of ten cases they are operating at peak levels, though without any evidence of major expansion programs. The other two followed a policy of curtailment from 1931 to 1934 but have since been expanding again. In the apparel and the auto supply fields even greater expansion is evident. In the shoe field, two of three major chains are still expanding rapidly. In the case of restaurants, however, three out of four have curtailed considerably. In the drug and cigar fields, bankruptcies have made long-range records difficult, but three of five chains are at their peak levels.

From these records, it should be evident that a marked difference is apparent between the chains in the grocery field and elsewhere. That one field, the one which alone accounted in 1935 for about 50,000 of the 140,000 chain outlets, records a universal and drastic policy of retrenchment in outlets. Probably filling station chains, for which I have no data other than that of the Census, show an even greater reduction. To be sure, individual chains in other fields are also reducing the number of units, but they are clearly exceptions. Most chains in other lines are holding at present levels or advancing to new peaks.

It is important to have one other set of facts in mind; that is, the record of sales. For nine major grocery chains, not including A. and P., whose figures are not available, sales in 1929 were 898 million dollars. For 1937 they totaled 1,011 million dollars, an increase of 13 per cent, this in the face of a greatly reduced number of stores. A similar story of increased sales is apparent in all the other fields, six out of nine variety chains having exceeded their 1929 level in sales but with the assistance of store expansion as well. The three shoe chains had sales in 1929 of about 55 million dollars. In 1937, they totaled over 67 millions. Two drug chains have advanced from 62 to 90 millions and the leading auto supply chain has more than doubled its sales.

In all this record, the significant change seems to lie in the record of grocery chains. After a long established policy of seeking increased profits by increasing the number of outlets, A. and P. appears to have changed its policy in 1925. Sales for an average A. and P. store of \$31,000 in 1924 were pushed up to \$68,000 by 1929. It is perhaps a form of business sophistication to discover that an enterprise can reach the point of diminishing returns and that further increases in profits must come not so much from adding more units of like kind, but from the elimination of unprofitable units or activities. At any rate, grocery chains seem now to be clearly aiming at more

volume per store rather than at more store per chain. In many market areas single large stores are being substituted for clusters of smaller stores in the neighborhood. These new large units so closely resemble super-markets, that experts disagree as to whether or not they should be included in the new category. I may summarize the new principle as "the way to strengthen a chain is to remove its weakest links."

Inasmuch as evidences of the new policy first appeared in 1925, and the policy was generally adopted by 1931, it can hardly be blamed on the chain-store tax laws. Nevertheless, these have acted as a factor contributing to the enforcement of the trend and, furthermore, to driving an additional wedge between the records of the grocery chains and those in other fields.

The last few years have seen nearly one-half the state legislatures levy some special form of tax on chain stores. In general, the form taken is that of a graduated license or occupation tax levied annually, the rate increasing according to the number of stores in the chain in the state, although Louisiana started a new precedent by relating the rate to the total number of stores in the chain regardless of the location.

By the end of 1935, such taxes were in force in sixteen states. Comparison of chain store outlets and sales in 1933 and 1935 should give some indication of the immediate effect of the new laws. That there is no universal reaction is shown by the strange case of Maine. To be sure, its law, since repealed, set a rather low maximum rate of \$150 per store over twenty-five in the chain. However, from 1933 to 1935, the number of chain outlets in Maine increased more than in any other New England state, none of which had such laws. And Maine was one of the four states (it apparently has a habit of disliking to follow the majority) in the country in which chains increased their proportion of total sales.

Three of the chain-store tax states which showed the greatest reduction in the number of chain outlets are cases where the usual exemption for filling stations was omitted—Indiana, Iowa, and Colorado. However, despite major reductions in outlets, in no one of these states was the decline in the total volume of business done by chains particularly noticeable. In fact, in Colorado, despite a decrease of 26.8 per cent in outlets, the share of total business done by chains actually increased.

In general, one is impressed by the absence of correlation between taxes and chain-store trends up to 1935 except in the filling station field. In that instance there was already considerable discontent among the refiners with their captive chain outlets, and they quickly transformed their status to that of landlord only, a device which apparently worked so well that it was adopted in states where no chain store tax laws existed. However, other chains seem to have been little affected up to 1935. At that time, there still remained legal controversies which have since been cleared away. The enactment of the Pennsylvania law in the spring of 1937 at once brought

announcements of closings by several of the leading grocery chain operators in that state.

It is obvious that the burden of the tax depends in large degree on the size and profit ratios of the stores operated by the chains concerned. Both grocery and shoe chains tend to operate small-scale outlets and groceries, in particular, with a thin margin of profit. In the grocery field, several of the major chains average as little as \$40,000 sales per year per outlet, the Great Atlantic and Pacific Tea Company and Kroger Grocery and Baking Company are perhaps near \$60,000, and Safeway Stores appears at the top with an average of over \$100,000. Three leading shoe chains all fall slightly above the \$50,000 per year level, although their profit margin is considerably above that for grocery stores. The limited price variety chains, however, run from \$100,000 sales per store per annum up, with F. W. Woolworth Company at \$150,000 sales per store and S. H. Kress and Company at the top with a \$350,000 average. Drug, restaurant, and auto supply chains are also usually over the \$100,000 size bracket.

To bring this generalization down to earth, let us make the severe assumption that the Louisiana tax law be enacted in all states, which would mean a tax of \$550 per store per year. Assuming for the Great Atlantic and Pacific Tea Company the figure of 15,000 stores, and that is probably too high, the tax would be \$8,250,000, or almost exactly one-half the net profits reported for 1937. Safeway Stores, Inc., with about 3,275 stores in 1937, would have a tax payment of \$1,800,000 against a net profit of \$3,000,000. However, F. W. Woolworth Company, the largest limited variety chain with its 2,000 stores, would pay \$1,100,000 against a net profit for 1937 of \$33,000,000. J. C. Penney Company, taken to represent the general merchandise field, with 1,500 stores, would pay \$825,000 compared with 1936 net profit reported to be about \$19,000,000. The Walgreen Company, in the drug field, with its 500 stores would pay \$275,000, compared with a net profit of \$2,750,000. And Melville Shoe Corporation, with its 700 Thom McAn, John Ward, and Frank Tod stores, would pay \$385,000 of 1937 profits of \$1,900,000.

These estimates indicate that the impact of the tax is greatest on the food and grocery chains, but even there is not clearly destructive. To the extent that individual states such as California and New York do not join the movement, and rates in other states are below the Louisiana basis, the burden will, of course, be appreciably less than the above estimates. On the other hand, if Congressman Patman succeeds in his program for a double-jointed tax law, multiplying the base rate by the number of states in which the chain operates, the above estimates of tax burden will be sad understatements.

While many other factors can be suggested as contributing to this bit of economic history, I should like to center my analysis around the proposition

that mass distribution is primarily dependent upon price competition for customers to capture and hold its market. The grocery chains have seen their advantage disappearing, as voluntary groups have obtained the price differentials of mass buying for the independents. A further factor in the process of equalization is the influence of the Robinson-Patman Act, in leveling somewhat the treatment of purchasers. These advantages have, of course, been of considerable assistance in permitting lower selling prices to consumers. The new defense, or perhaps we should say offense, is to achieve further economies through mass distribution in the individual outlet. The possibilities along this line have been demonstrated rather emphatically by the super-market. It is significant that what little we know about supermarkets indicates that they have attracted customers away from the chains rather than from independent retailers, since the appeal of the new outlets is essentially in the area of price. Evidently there is a fraction of the public which can be captured by a price appeal. Other things being equal, they may prefer the personal relationship and service of the neighborhood independent. Of course, a few serious shoppers are undoubtedly attracted by the super-market's permission for them to trundle their carriages about among the grocery items undisturbed by blandishment or blarney. But the chain store's prospective customers are essentially those in the population who can be attracted by price advantage either real or fancied.

This thesis is further supported by considering the other areas in which chains are still proceeding along well-established lines. By definition, the limited price variety chains operate their large units with a definite price appeal. They have so captured their market that competition from independents is negligible and their expansion is based on price competition with numerous specialty shops—hardware stores, stationery shops, and the like. The drug and auto supply chains are definitely low price operators, maintaining their positions in considerable measure through volume. The shoe chains usually have intimate relations with one or two manufacturers so that jointly they have developed a low price article relative to quality. Only in the grocery chain has the ability to maintain a price differential been seriously challenged by independent competitors.

As a final bit of supporting evidence, the record of the depression should be noted. As income fell, the percentage of total sales made by chains increased from 20.0 per cent in 1929 to 25.4 per cent in 1933. As incomes rose, the ratios fell to 22.8 per cent in 1935. There is some indication that this shift has a definite connection with the pressure on certain consumers to purchase more carefully. Rightly or wrongly, they believed that their dollars would go farther in chain stores. Price competition was, temporarily at least, the concern of more purchasers.

If my thesis is correct, that price competition in selling is the essential basis of chain distribution, then the independent store and the specialty shop

have a definite assurance of survival. Price appeal, at least in the degree of differential which is feasible, can at most attract only part of the buying public. Various types of convenience and service will always be in demand. If chains increase their size of store *à la* super-market, they will stress price more and more and these other forms of attraction less and less. And the wholesaler cannot become extinct, because he provides necessary services to the independent distributor. There is, therefore, a limit set by such economic forces to the extent to which present trends can go both as to the decline of the wholesaler and the further rise of the mass distributor. One other trend is important for this picture: that limit to the economic trends may be reached even more quickly if we do not wait for economic forces to act, but continue the trend of law-making, endeavoring to define our distributive structure by direct or indirect legislative action. The battle ground is as much political as economic.

FINANCIAL CONTROL OF LARGE-SCALE ENTERPRISE

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There has been much discussion in recent years about the control of the large corporation.¹ We hear a great deal about concentration of control, separation of ownership and control, control by banking and other financial interests, and so on. One of the most striking characteristics of the writings in this field is the vagueness that surrounds the frequently very loose use of the word "control." Surprisingly little has been said about the content and nature of control (in relation to corporate activities), and little, if any, attempt has been made to distinguish between the possession of power, on the one hand, and the exercise of control arising from the possession of power, on the other. Nor has there been any systematic effort to relate the control concepts implied in various studies of corporate organization to the active control function of the entrepreneur which is supposedly necessary to the efficient working of our economic system.²

I shall attempt in this paper to dispel some of the ambiguity now surrounding discussions of corporate control. I propose, in particular, to examine the power possessed by financial groups and the extent to which this power is translated into the exercise of an actual and active control over the productive process.

I. Entrepreneurial Control and the Large Corporation

In assaying the nature and extent of "financial control," we must have clearly in mind what we mean by "control." In particular, what does "control" mean in terms of active direction of the productive process, and how does it relate to the various aspects of the dynamic leadership that has been ascribed to the entrepreneur of economic theory? Better to judge the economic significance of the influence of financial groups on corporate enterprise, I shall therefore first briefly consider the nature of what may be called "entrepreneurial control," particularly as such control may manifest itself in the large corporation.

Whatever the number of agents or factors co-operating in production,

¹ I am indebted to the Harvard University Committee on Research in the Social Sciences for financial aid in carrying on a study of modern business leadership, one aspect of which is dealt with in the present paper.

² There has been some brief treatment of the question: What happens to the entrepreneur in the large corporation when ownership is divorced from control? Cf. R. A. Gordon, "Stockholdings of Officers and Directors in American Industrial Corporations," *Quarterly Journal of Economics*, L (1936), pp. 652-55, and the references there cited; also B. W. Lewis, "The Corporate Entrepreneur," *ibid.*, LI (1937), pp. 535-44, and R. A. Gordon, "Enterprise, Profits, and the Modern Corporation," in *Explorations in Economics*, pp. 306-16. In general, specialists in corporate organization have paid little attention to the theoretical implications of their work, while theorists, on this point as on others, have not taken sufficient cognizance of the details of the contemporary institutional setting.

and whatever the legal forms which business enterprises may assume, joint production for a market in a system characterized by complex division of labor and continual change requires the directing and unifying force of business leadership. This function of leadership, which involves foresight, planning, and active decision-making in the formation of policies, I propose to call the function of entrepreneurial control. Since the productive process is divided into units—that is, business firms—the exercise of this function involves control over and direction of the activities of the firm. Entrepreneurial control, as thus defined, is an active concept; it implies the exercise of a certain type of leadership, not merely the possession of certain powers. The ability to exercise such control over any firm may be obtained in a number of ways, of which legal ownership is only one.

In the one-man concern, entrepreneurial control is, of course, exercised by the owner; and a combination of such control and the risk-taking inherent in ownership were the standard elements in the complete function attributed to the entrepreneur of economic theory. The application of entrepreneurial concepts to the large corporation raises a host of new problems, to the solution of which the two types of treatment most generally made offer very little. One solution is to redefine entrepreneurship solely or chiefly in terms of risk-taking and to identify the stockholder as entrepreneur. The other is to declare the problem insoluble and to conclude that the atom of entrepreneurship, like the atom of ownership, has been forever and irreparably split in the large corporation.

Whether or not risk-taking should be considered all or part of the entrepreneurial function is an academic question into a discussion of which I prefer not to enter here. The important point is this: Whether the dominant type of business organization is the individual proprietorship, the partnership, or the corporation, business leadership or entrepreneurial control is still necessary. My aim, at this juncture, is to see what happens to this function in the large corporation. Two problems arise here. First, what does entrepreneurial control mean in the light of the usual delegation of powers found in the large corporation? Secondly, the residue of control remaining after allowance for such delegation of powers is itself divisible, and we must take account of the fact that this control may be shared by different individuals or groups in a variety of ways.

With respect to the problem of delegated powers, it may be noted that some degree of direction, planning, and policy forming is assumed even by minor executives. Do these persons exercise entrepreneurial control, or is such control exercised by those who choose such men? If choice of men is the criterion, and if delegated decision-making is excluded, then we are driven up the pyramid of management organization to those actually responsible for the selection of boards of directors. Those so responsible, incidentally, are frequently referred to as the "ultimate control" group and

are distinguished from "management," mainly the top executives, to whom decision making is delegated.⁸ While recognizing the importance of this distinction between "ultimate control" and "management," I do not think that this treatment provides an efficient enough tool to analyze the problem of control of corporate activity. Too much is hidden in the vague term "management," and the emphasis on "ultimate control" frequently implies that outside groups play a more important and active rôle in shaping the firm's policies than is actually the case. I should prefer to pick out the various functions of active leadership, with the emphasis on the impact of such leadership on the productive process, to define this leadership as entrepreneurial control, and then to seek, on the basis of available evidence, how such leadership is gained, among whom it is shared, and so on. I therefore suggest the following tentative definition of entrepreneurial control: "Entrepreneurial control consists of making those broad decisions which determine the general nature of a firm's activities, provided such decisions are not subject to the active veto power of others in fact (whatever the nominal relationships may be). Such control includes the origination of major policies, the making of the residue of decisions not delegated to subordinates, the choice of those to administer policies, and the determination of the extent to which decision-making and authority are to be delegated." This definition is, of course, vague; it is made so purposely. The general idea, however, should be clear; the emphasis, to repeat, is on active and actual leadership.

This function of leadership is really a composite function, possible of division in a number of ways. Although limitations of time preclude any detailed discussion of the ways in which entrepreneurial control may be divided, a few illustrations will indicate some of the possibilities and give further concreteness to the concept. Typically, in the large corporation, one or a few top executives make most of the broad decisions that shape that firm's policies. On occasion, however, the decision makers may be forced out of the position of entrepreneurial control by a powerful interest group, until then passive with respect to decisions currently being made. Until that time, the decision makers, not the passive interest group, have exercised entrepreneurial control, since it is they, not the latter, who have determined the direction of the firm's course in the productive process. Though all or the major part of entrepreneurial control is usually, in the large corporation, exercised for long periods by important executives, it may be frequently shared, either continuously or on special occasions, with certain individuals and committees on boards of directors or with an outside interest group. Seldom do boards as a whole or stockholders as a whole exercise continuously any significant part of the function of entrepreneurial control. Directors

⁸ Cf. A. A. Berle, Jr., and G. C. Means, *The Modern Corporation and Private Property* (New York, 1933), pp. 69-70.

as groups and certain outside groups, later to be mentioned, exercise partial or complete entrepreneurial control occasionally—but, in the case of complete control particularly, such exercise is usually sporadic.

II. *Segments of Interest in the Corporation*

Let us turn now to the groups which typically have an interest in the large corporation. These interest groups or segments make up the economic environment within which entrepreneurial control is exercised and create pressures, in proportion to the power they can acquire, on those making entrepreneurial decisions. Actually, those in entrepreneurial control come from one or more of these interest segments—usually, as has already been implied, from the management segment. But some other interest group, depending on the power it has and the strength or weakness of the other groups, may take over some part, though seldom all, of the composite entrepreneurial function.

An interest group or segment with respect to a corporation exists when the economic welfare of that group depends directly, and in an important degree, on the activities of the firm in question. Such interests usually, but not necessarily, arise out of buying and selling relationships between the group and the firm. These groups may be variously classified; the following list represents one possible classification which will be helpful in analyzing our main problem:⁴ (1) Suppliers of goods by sale or lease (for example, materials, equipment, land, and so on); (2) lenders of money-funds, both short term and long term; (3) owners (whether ownership arises from investment of capital or watered stock); (4) labor; (5) providers of organization services, chiefly financial, legal, and engineering; (6) suppliers of miscellaneous services, not otherwise listed; (7) government, both as provider of certain services and the collector of taxes and as the representative of the public welfare, as such is conceived by those in political power; (8) customers of the firm; (9) firms in the same or similar industries affected through competitive relationships; and (10) management.

Time does not permit detailed discussion of the various groups as thus classified. A word, however, should be said about the inclusion of owners, that is, stockholders, as a separate group. From many points of view, stock-

⁴ This classification, with one or two significant differences, is very similar to a scheme of classifying "creditor relationships" recently developed in an unpublished manuscript by Mr. Mark Rosenfelt, of Harvard University. While the above classification was worked out independently, and with a somewhat different emphasis and aim, the credit of priority belongs to Mr. Rosenfelt. The latter's classification originally contained six groups, all supplying goods or services to the firm: labor, investors (including stockholders), management, suppliers of goods, customers, the state; to these groups Mr. Rosenfelt has more recently added bankers, distributors, and competitors. On some points, Mr. Rosenfelt has disagreed with my analysis, although, in view of the similar approaches, the similarities in our analysis and conclusions are more significant than the differences.

For other treatment of interest segments, cf. P. M. O'Leary, *Corporate Enterprise in Modern Economic Life* (New York, 1933); also Berle and Means, *op. cit.*, p. 120.

holders should be classed with other suppliers of money funds; in terms of control exercised, they usually, at least in the large corporation, resemble passive creditors. Control is actually shared with or completely taken over by one or more of the other interest groups. Nonetheless, the nature of the legal institution of private property does create certain rights and interests that mark off the ownership group from the creditor groups. This demarcation, however, should not be taken to imply that owners do or even can exercise control merely because they are owners in the legal sense.

Although, according to legal theory, the owners have the right of relatively complete control over the firm, even the law recognizes the interests of the other groups in various ways and at various times and may circumscribe the control powers of the owners in the interests of one or more of the other groups, for example, through limitations on property rights in the interests of the general welfare or in the interests of creditors in the event of bankruptcy. It is also possible, of course, that various of the other interest groups may secure more or less complete control by acquiring some degree of ownership. But even without the aid of ownership, the other interest groups can, in the case of the large corporation, acquire sufficient power to exercise, if they so choose, part or in some cases all of the entrepreneurial control function. Acquisition of power by an interest group is likely to occur when one or more of the following conditions prevail:

1. When the potential control powers of ownership are not exercised, as when stock ownership is dispersed, in which case management may assume control.
2. When the service or commodity supplied by an interest group is monopolistically controlled, and is also of strategic importance to the firm.
3. When customers are important and use their bargaining power.
4. In the case of the government, by use of its sovereign powers. (If the government is indirectly controlled by one or more of the other interest groups, government control may, of course, be such as to benefit such groups or grant powers over the corporation to them.)
5. When, for one of several reasons, a particularly close relationship exists between management and another interest group.

In general, power is likely to be acquired (a) when any interest group stands in a strong bargaining position or (b) when any interest group, whether previously in a strong bargaining position or not, can acquire instruments of control through manipulation of existing institutional relationships, such, for example, as the legal conditions of ownership.

Naturally, the powers that may be acquired by the various interest groups will vary—depending on what is the nature of the group, which of the above conditions prevail, and, in general, on the degree to which legal and

economic institutions tend to favor particular groups in their relations with a given firm. Power acquired may be partial or complete; and acquired power may not be exercised or may be exercised with respect only to a part of the corporation's activities or over some or all of these activities only at particular times. In short, a strong interest group may, depending on a variety of conditions, exercise none, part, or all of the function of entrepreneurial control.

III. The Financial Interest Groups and Financial Control

I now turn finally to our main problem, for which the preceding discussion provides the necessary background. How, and to what extent, do the financial groups among the various interest segments acquire power over the corporation? And, granted that such power is held, to what extent is it in practice translated into active entrepreneurial control?

The so-called financial interest groups would include those in our list supplying money funds—namely, owners and short- and long-term creditors (including banks, individuals, and investing institutions)—as well as those, chiefly investment and private bankers, providing financial organization services. We should probably include also professional manipulators of instruments of control—large-scale speculators, bankers, and other wealthy groups—who do not represent an interest segment with respect to a particular corporation until they finally come, frequently through a form of ownership, into possession of some degree of power. For most purposes, these financial interest groups may be taken to be financial institutions and wealthy individuals—identified in common parlance as "the interests."

Today economic activities are carried on in pecuniary terms. The provision of capital usually takes the form initially of supplying money funds, and trading in titles to wealth has become to a large degree either a substitute for or a prerequisite to trading in concrete wealth itself. In view of this, it is not surprising that those in control of the supply of money funds and those expert in dealing in titles to wealth should find themselves in a strategic relation to the large corporation.

Obviously any one interest group, and this includes the financial segments, may be made up of a large number of individuals or institutions. To acquire power, the individuals making up the interest group, if many, must act in concert. The increasing power of the labor interest segment, after the organization drives of the last five years, is an eloquent case in point. The situation is more favorable for control if the interest group represents only one or a few individuals or institutions. The concentration of large-scale banking—both commercial and investment—into few hands, the concentration of investable funds among relatively few individuals and institutions, and the harmony of interests among these individuals and groups mean that the supply of funds and financial services is subject to more or less monopoly.

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listic control. To the extent that such monopolistic control does exist, the financial interest groups thereby acquire elements of power over the corporation.

Now among the individuals and institutions making up the financial interest groups, commercial, private, and investment bankers stand out as occupying a particularly strategic position. Some of the more important reasons for this fact should be noted. There is a substantial degree of monopolistic control by commercial banks over the supply of short-term credit. This is perhaps most serious in the case of the small local firm, which in times of need is likely to find itself begging at the door of the only available lender, the local bank. But commercial banks may acquire power over large firms as well—not only when the firm's operations are chiefly local in character (several cases of large local utilities might be cited), but also when corporations operate on a national scale.⁵ Similarly strong control over the channels of supply of long-term credit is held by investment bankers. The unwritten rule, even if occasionally broken, that forbids open competition among bankers for the business of a firm ordinarily dealing with a given banking house, accentuates the monopolistic powers of bankers.⁶ These powers, of course, are further augmented if investment bankers tend to act together, or if one or a few are dominant in the field.

Another reason for the strong position of banks and bankers lies in the close relations which may exist between them and large individual and institutional investors, the latter looking to the former for advice and guidance.⁷ Such relations have undoubtedly existed between insurance companies and investment trusts and bankers, though recently in the vigorous scramble to invest idle funds, some of these relations have probably become somewhat less cordial. A close relationship not sufficiently recognized is that created by the handling of trusts and estates. In a number of companies, commercial banking representation on boards of directors is apparently due in good part to the fact that the banks concerned represent substantial amounts of ownership residing in trusts and estates which they administer.⁸

⁵ Power by commercial banks seems to arise in two types of situations. One type represents the influence which comes from lending. The other type is the more interesting and in some ways of greater fundamental importance. The larger commercial banks in any city are likely to be the rallying point and provide the leadership for the city's financial interests. As a result, local capitalists sit on the bank's board, and representatives of the bank are found on the boards of important concerns which have an interest (financial or otherwise) in the city in question. Boston provides a good example of such a situation.

⁶ Cf. *Stock Exchange Practices*: Report of the Committee on Banking and Currency, 73rd Congress, 2nd Session, Senate Report No. 1455 (Washington, 1934), pp. 85-7.

⁷ Notice, in this connection, the situation described in footnote 5.

⁸ One interesting example of such a situation might be cited. Some years ago, the management of a very large industrial company was criticized because there was too much management representation on the board and too little representation of stockholding interests. To answer this criticism, several commercial bankers were elected to the board. The stock of the company was widely held, but it was found that sizable blocks were held in trusts and estates being administered by large commercial banks. Election of the bankers, therefore, provided a simple way of permitting additional stockholder representation on the board.

In general, a common interest in money funds and titles to wealth tends to strengthen the ties among all of the financial groups mentioned. A further example would be the harmonious relations between investment or private bankers and commercial banks.

Yet another reason for the power of bankers is the importance of financial activities to any large firm and the consequent tendency of owners or management to seek the advice of bankers as financial experts. Banker representation on the financial committees of boards of directors is by no means due exclusively to the insistence of the bankers themselves. Of course, it may work the other way also; if bankers are close to a firm, they may insist on interfering in financial affairs, even though they are content to leave control of all other aspects of the company's affairs to management. As a matter of fact, power by financial interests is most likely to be translated into control of financial affairs; this holds true whether the group with power is a bank or banker or a strong minority interest. Emphasis on financial matters, as a matter of fact, extends to the organization of management itself. Powers to make decisions may very largely be delegated to subordinates, but invariably the power of approval or veto over the expenditure of large sums is reserved for the chief executive or some powerful committee.

The management interest segment itself may in particular cases be closely related to bankers as well as to other financial interest groups. Common social and economic origins or interests, as well as the general importance to the corporation of financial matters, play a part here.

Naturally the degree of power that the bankers can obtain will depend upon the relative strength of the other interest groups. Though the powers of owners have declined with the diffusion of ownership, the potential powers of the government have come to be exercised more vigorously. The relative strength of two groups in particular, namely, the management and the ownership segments, seems to be most important in explaining the continuous presence of marked banker power. Some firms, particularly if there is no large minority interest and management is not particularly strong, may continually be under some measure of domination by financial interests. On the other hand, a strong and able management may continue in complete control, even though reliance on bankers for aid in expansion or for other purposes has been necessary. The Chrysler Corporation apparently represents such a case.

The financial interest segments, then, particularly banks but also other financial groups, stand in a strategic relation to the corporation. In practice, certain occasions have been particularly propitious for the acquisition of power by the financial interest segments, most of such occasions having to do with the need of corporations for funds or financial services.

Financial interests are particularly likely to acquire power when a firm

is undergoing rapid expansion. This was frequently the case with the railroads in the nineteenth century. Whatever power bankers may have acquired in the case of the American Telephone and Telegraph Company seems to date back to the rapid expansion of the immediate pre-War period.⁹ On the other hand, expansion may require banker co-operation and yet lead to the acquisition of little power by banking groups. This would seem to have been the case with companies such as the Chrysler Corporation and the National Steel Corporation. Where expansion out of earnings is possible, banker influence can be avoided. The Ford case is well known, and other large concerns also have grown to their present size without having to submit to influence from outside financial groups.

Banking and other financial groups are in a position to acquire power when a corporation finds itself in financial difficulties. The difficulties may result from too rapid expansion. In 1910, financial aid to General Motors in such a situation resulted in the acquisition of considerable power by banking interests;¹⁰ later, in 1920, the need of financial aid led to banker representation on the board, and, finally, to a transfer of power from W. C. Durant to the du Ponts.¹¹ Many other companies (for example, Goodyear Tire and Rubber)¹² yielded to some banker influence in 1920-21; and again in the last Great Depression similar situations developed. Actual reorganization has proved a fruitful source of power for financial interests. Numerous cases of railroad reorganization could be cited, and similar conditions have obtained in other industries. The rôles played in the past by bankers and creditor groups during reorganizations have been well described by the SEC.¹³ Now, however, activities of bankers in reorganization proceedings have been seriously circumscribed by the new Chandler Act.¹⁴ But apart from formal reorganization, resort to bankers or other lenders in times of difficulty may well permit acquisition of substantial power by financial groups.

Investment bankers are also in a position to establish close relations with a firm when owners of a closely held corporation seek to transfer

⁹ Cf. Federal Communications Commission, *Telephone Investigation, Special Investigation Docket No. 1, "Report on Control of Telephone Communications"* (Pursuant to Public Resolutions No. 8, 74th Congress), Reports No. 62 and 67.

¹⁰ Cf. *A History of the General Motors Corporation* (mimeographed report prepared by the company), p. 4; also L. H. Seltzer, *A Financial History of the American Automobile Industry* (New York, 1928), pp. 162 ff.

¹¹ Cf. Seltzer, *op. cit.*, pp. 190 ff; E. I. du Pont de Nemours and Company, *Annual Report* for 1920. The du Pont interest in General Motors dates back to 1915. See the du Pont Company's annual report for 1919; also Seltzer, *op. cit.*, pp. 142, 173-74, and *Fortune*, December, 1934, p. 83. For further discussion of these and other episodes in the history of General Motors, see Arthur Pound, *The Turning Wheel* (Garden City, N.Y., 1934).

¹² See Hugh Allen, *The House of Goodyear* (Akron, 1936), pp. 46-50; also H. and R. Wolf, *Rubber* (New York, 1936), pp. 447-53.

¹³ *Report on the Study and Investigation of the Work, Activities, Personnel and Functions of Protective and Reorganization Committees* (Washington, 1936-38).

¹⁴ See Professor O'Leary's discussion on, "The Rôle of Banking Groups in Corporate Reorganizations," in these *Proceedings*.

ownership to the public. Not only may bankers demand some influence as the price of underwriting, but subsequent weakening of the ownership interest through diffusion removes that interest from its former position of power.¹⁵ Similar factors enter in the case of mergers. The part played by the House of Morgan in the formation of the U. S. Steel Corporation is the best known but by no means the only important case of this sort.

Independent of action by the corporation, financial interest groups may acquire power by manipulating the instruments of control that are available. The careers of the Van Sweringens, who apparently had the aid and advice of bankers, of Cyrus Eaton, and of many others (including banking houses also) are illustrations in point.¹⁶

Apart from the manipulation of legal devices, financial groups are, in general, most likely to acquire power when, for any reason, long- or short-term capital must be raised. Although complete evidence is lacking, I should like to venture the opinion that the periods of greatest power by the financial groups, particularly bankers, were the decades 1895-1905 and 1920-30. The earlier period witnessed the reorganizations following the 'ninety-three depression and the peak of the pre-War merger movement. The 1920's began with the difficulties of 1920-21 and included the post-War merger movement, vigorous capital expansion, tremendous security issues, marked weakening of the powers of the ownership segment, and extensive manipulation of various types of instruments of control.

I should like to consider now the extent to which the power acquired by the financial interest groups means an actual exercise of the entrepreneurial control function. To what extent is power translated into active control?

The power of the financial segments, as of any interest group, may remain more or less passive—existing, but not translated into an active force. Where such is the case, the power of the financial interests takes the form of a general influence or pressure, competing with the pressures being exerted by the other interest groups and with them making up the environment conditioning the operations and decisions of those who do actively determine policy.

The cases in which the possession of power by financial interests means full and continuous exercise of the entrepreneurial function are probably rare. A substantial amount of control is supposedly exerted by bankers in the U. S. Steel Corporation,¹⁷ but even here it is highly improbable that influence is directly exerted over the entire range of major policy decisions. Fairly

¹⁵ A good example of such a situation was the Dodge Brothers, Inc., financing in 1925. For brief discussion of this topic, see *Stock Exchange Practices*, Report of the Committee on Banking and Currency, 73rd Cong. 2nd sess., Senate Report No. 1455, pp. 91-3.

¹⁶ For brief discussions of examples of such cases, see *ibid.*, pp. 358-84, and refer to the numerous volumes of hearings on *Stock Exchange Practices*, of which the *Report* in the preceding reference is a summary. For a general discussion of control through legal devices, see Berle and Means, *op. cit.*, pp. 72-80.

¹⁷ This case is discussed further at a later point.

comprehensive control is also frequently exercised by banking groups after aiding a firm in financial difficulties; selection of a new management, the determination of a policy of retrenchment, and the exercise of an active veto power over financial matters are all likely to be undertaken by the new group in power.¹⁸ Comprehensive control is not likely, however, to continue indefinitely. On the whole, I think it is safe to conclude that bankers and other outside financial groups are neither willing nor able to make all of the decisions which we should be likely to include in even a narrow concept of entrepreneurial control.

Frequently a good deal of the responsibility for policy will be actively assumed by a strong minority interest. The best known case, perhaps, is that of the du Pont interest in General Motors, although even here considerable, if not most, initiation of policy is independently undertaken by management.¹⁹ It is interesting to note in this connection that in 1935, of seven direct du Pont representatives on the board, all seven were on the financial committee, but only one was on the executive (that is, the operating) committee.²⁰ In many cases, companies loosely classed by some writers as under "minority control" are actually almost, if not entirely, completely dominated by management. Despite substantial minority stockholdings in the Consolidated Oil Corporation, for example, there is little evidence of anything other than management control of the company.²¹ The same passivity seems now to be true of the Rockefeller interests in the former components of the Standard Oil Trust, and of numerous other large minority owners. In yet other cases, the degree of active control exercised by the minority group has varied with time.

More or less complete control may be exercised sporadically by bankers or other financial groups. The cases of financial aid and reorganization have already been mentioned. Financial interests, chiefly bankers, are also likely to play an important part in the selection of new managements when the control powers of owners are weak. Boards of directors, ordinarily passive in companies dominated by a strong chief executive, have been known, on the latter's death or retirement, to turn to bankers for aid or advice in choosing a successor.²² Since the new management may exercise completely independent discretion from then on, entrepreneurial action by the financial group in such cases may be limited to the act of choosing the executive. Sometimes the right to choose, or approve the selection of, management is demanded by bankers. In a recent case, underwriters of a large bond issue

¹⁸ Such comprehensive control apparently occurred in the Goodyear case previously cited.

¹⁹ Cf. *Fortune*, Apr., 1938, pp. 73 ff., especially pp. 75, 110, 112; Pound, *op. cit.*, Chs. XIV, XXV.

²⁰ There is some evidence which suggests that the degree of du Pont control has varied, probably being larger in the early 1920's than it is now.

²¹ Cf. *Fortune*, Nov., 1932, pp. 57 ff.

²² The cases of several railroads might be mentioned. Similar situations have apparently also occurred in some public utility and industrial companies.

secured an agreement with the borrowing firm that the successors to the two chief men in management must be satisfactory to the bankers floating the issue.²³

These illustrations of control in some form by the financial interest groups could be multiplied. The important thing to remember, it seems to me, is the wide variation in the types of activity to which financial power may give rise, and the fact that such power seldom means complete control. Control is usually limited to the following matters: control over new issues, general financial advice, approval of expansion programs, and control over such nonfinancial and other financial matters as directly affect the interests of the group in question. All of these elements of control may be exercised whether the ownership or the management segment assumes the exercise of the other elements of control. The usual aims in this partial control are protecting the particular interest of the group in the firm and maintaining or enlarging the pecuniary gains arising from such interest.²⁴

The same interest group may, of course, exert an influence over two or more firms. Situations of this sort have come to be referred to as cases of "concentration of control." A more accurate term might be "concentration of power."²⁵ Some active control, however, may be exercised, and relations among the firms under common influence may to some extent be dictated by the "control group" to its own advantage.

I shall take the liberty to give one final example of the variation that may exist in so-called banker control. A number of large corporations are re-

²³ See the prospectus for a bond issue of the Cleveland Cliffs Company, dated Dec. 10, 1935.

²⁴ These aims of "financial control" affect the economic system in different ways. Strong banker control has been supposed, on occasion, to result in conservative financial programs, stable price policies, and avoidance of excessive competition. The restraining hand of the banker is thus seen (and justified) as making for conservatism and stability. Evidence of such conservative banker control can be found in numerous cases, although the extent to which stability has been the result of this control might be disputed. On the other hand, banker control has frequently been used to effect policies which are anything but conservative. Overexpansion (for the sake of the profits of new security financing), uneconomic mergers (for the same reason), holding company pyramiding, manipulation of security prices, etc., are examples of effects of a type of banker control which probably had its culmination in the 1920's. We should be careful, however, in indiscriminately branding bankers as the scapegoats; other financial groups have been equally guilty. In many cases of unsound financial practices, also, corporate managements have by no means fought the blandishments of the financial groups, nor have they been free from initiating such policies themselves. (For some discussion of the effects of outside financial control on corporate price policies, see E. G. Nourse and H. B. Drury, *Industrial Price Policies and Economic Progress* [Washington, 1938], pp. 145-156.)

²⁵ "Concentration of control" in this sense has received much attention and references are still made to the "Money Trust" and to control by the "interests" or by "Wall Street." A good deal still needs to be done on this problem. What are the threads of relationships running from firms to financial groups and among the members of those groups? To what extent can separate financial groups—centering about families, banks, or other institutions—be delineated? What is the significance of interlocking directorates in this connection? To what extent does the presence of several men on the boards of two or more companies indicate concentration of control in some significant sense? Numerous other questions of a similar nature might be asked. Concentration of wealth means concentration of power—economic and political—but the nature and significance of this concentration have yet to be fully explored.

ferred to as "Morgan companies"; two of these are the American Telephone and Telegraph Company and the United States Steel Corporation. There is considerable evidence, however, that the degree of Morgan power and control in the two cases differs greatly. In the Steel Corporation, there seems to have been substantial power in banking hands, and this power has, in the past, been translated into something more than mere influence over financial matters.²⁶ The House of Morgan played the leading part in the formation of the company; J. P. Morgan himself was for a number of years chairman of the board; the chief executives of the company have been since its inception identified in some way with the Morgan organization or its banking allies; management policies in the past have been said to represent in some measure banking influence; and, of course, new issues have been handled by J. P. Morgan and Company, and, latterly, by Morgan, Stanley and Company. Despite the power and degree of control these facts indicate, however, it would be unjustified to assume that complete entrepreneurial control was exercised by the banking group. A very substantial degree of independent discretion has been retained by management, especially during the regime of Elbert Gary; and undoubtedly over a wide range of matters, management has been able to go its own way without serious interference from any other group.²⁷

In the case of the Telephone Company, there is little evidence that banker control, at least in recent years, has extended much beyond the giving of financial advice and the handling of new security issues. Financial groups, including the Morgan group, have some power, but there is little indication of any active control. Management is strong and apparently self-perpetuating; such matters as dividend policy, capital expansion, labor policy, and so on, are apparently in the hands of the chief executives, subject, probably, to merely passive and automatic approval by the Board of Directors.²⁸

²⁶ Selection of Big Steel for discussion is not meant to imply that this company represents by any means the extreme in banker control. Other examples of even stronger banker control might be given. The case is chosen because of the importance of the company and the fact that banker influence in this case has already been extensively discussed in print; witness the following statement: "The [Steel] Corporation is the leading example of what is known as 'a Morgan company.' Indeed, considering its size and the fact that the elder Morgan created it, the Corporation may well be called *the* Morgan company" (*Fortune*, Mar., 1936, p. 63).

²⁷ In all probability, also, the extent of banking control has varied with time. For discussion of Morgan and management control of this company, cf. the following: U. S. Congress, Hearings before the House Committee on *Investigation of the U. S. Steel Corp.* (Washington, 1911-12) (see the index, and House Report No. 1127, 62d Congress, 2nd Sess. [1912]); U. S. Commissioner of Corporations, *Report on the Steel Industry* (Washington, 1911), Part I; *Fortune*, Aug., 1931, p. 121, Mar., 1936, p. 61 ff., and June, 1936, p. 120; A. Cotter, *U. S. Steel: A Corporation with a Soul* (Garden City, N.Y., 1921), *passim*; Harvey O'Connor, *Steel-Dictator* (New York, 1935), Chs. 5-6; and Ida M. Tarbell, *The Life of Elbert H. Gary* (New York, 1926).

²⁸ Cf. Federal Communications Commission, *op. cit.*, Report No. 62, pp. 106-26; *Fortune*, Sept., 1930, p. 38. For indication of stronger financial control before the War, see FCC, *op. cit.*, Report No. 67.

Similar differences in the extent of banker control would probably also be found among other so-called Morgan companies, or among any group of firms subject to influence from a common financial group.

One concluding question might be asked: Is control by financial groups tending to increase or decrease? On the whole, the evidence points toward some decline in active control. Bankers are less inclined to sit on boards than they were in the 1920's, and the events of the last five years or so have made them somewhat less anxious to meddle, at least, openly, in corporate affairs. Investment bankers have also suffered a weakening of their hold over the channels of supply of long-term funds. There has been a significant increase in the amount of securities privately placed without banking aid. This has restricted the power of investment bankers, but probably has strengthened the potential powers of such financial institutions as insurance companies. Commercial banking influence may have declined with the increased self-sufficiency of large firms with respect to working capital, but this loss in a source of power is offset in part by the powers acquired through acting as the representative of large estates and trust accounts. And, of course, times of financial stringency will always provide means of acquiring power for lenders of short-term funds.

Federal legislation in recent years has tended to restrict both the powers financial groups can acquire and the amount of control they can or dare exercise. The Banking Act of 1933 brought about a formal separation of commercial and investment banking; the Securities Act of 1933 placed increased responsibilities on underwriters and, together with the Securities Exchange Act of 1934, circumscribed in various ways the activities of bankers and other financial groups. The public utility legislation of 1935 placed restrictions upon banks and bankers in their relations with public utility holding and operating companies,²⁹ and the Chandler Act should weaken significantly the control powers of bankers during reorganizations.

IV. Conclusion

The main aim of this paper has been to analyze the meaning of control and to indicate how and to what extent power by the financial groups has been translated into some measure of entrepreneurial control of corporate activity. I would urge that the distinction made earlier between power and control is an important one. There are other interest groups in the corporation besides the financial segments. These contend with each other and with the financial groups for a share in the total advantages accruing from the firm's activities. The powers of some of these groups are relatively weak; those of others, strong. And these relative strengths and weaknesses change

²⁹ "Public Utility Act of 1935" (Public-No. 333-74th Congress). Title I of this Act makes up the Public Utility Holding Company Act; Title II amended the original Federal Water Power Act, which became Part I of the Federal Power Act, and added Parts II and III to that Act.

with time and the changing institutional setting. As they change, the environment within which the entrepreneur operates changes, as do the stimuli to which the latter must react. These changes, also, alter the character of those exercising entrepreneurial control, as participation in such control shifts in part to members of different interest groups. As long as we retain capitalism in its present form, of course, the financial interest groups will continue to have a substantial degree of economic power and to participate in varying degrees in the active control of the economic system. The power of these groups is of great political as well as economic significance. It will repay the economist to probe further into the power of these groups and the extent to which such power is translated into active control of the productive process. Economists will be further repaid if the power and control of all the interest groups are studied along the lines suggested here. The changing nature, strength, and activities of these groups represent, after all, the changing framework of our economic system.

PRICE AND PRODUCTION POLICIES OF LARGE-SCALE ENTERPRISE

MYRON W. WATKINS, *Chairman*

The discussion in this session related chiefly to two aspects of discretionary price and output control under conditions of monopolistic competition as outlined in Professor Edward S. Mason's paper. These were: the significance of such situations for economic analysis, and their implications for public policy formation. Fritz Machlup devoted most of his discussion to the former aspect; Paul T. Homan all of his to the latter aspect; and Edgar M. Hoover, Jr., concentrated attention chiefly upon the analytical problems associated with a particular type of price behavior. Comments from the floor by Professor J. M. Clark, Mr. Leon Henderson, Don Humphrey, and Corwin Edwards directed towards a questioning of certain methodological suggestions by Professor Machlup led to the further development of some points in his paper.

FRITZ MACHLUP: Four standards for evaluating the practical significance of the theory of monopolistic competition may be distinguished. These are its usefulness to: (1) pure theorists, (2) economic analysts, (3) government officials, and (4) businessmen. We shall dismiss here the points of view of the first and last of these groups.

By "theory of monopolistic competition" one might mean a theory of the significance of product differentiation. But we find that a variety of other factors call for attention, as well. Economists have been aware of the existence of intermediate positions between pure competition and monopoly for at least a hundred years. What is new is the emphasis on product differentiation and the recognition of the surprising frequency of oligopoly. Because, first, of a doubt that product differentiation unaccompanied by fewness of sellers requires for fruitful analysis the more complicated assumptions of monopolistic competition theory, as well as, secondly, of a suspicion that such situations are rare, our inquiry may well be confined to the practical significance of a theory of market behavior of enterprises under circumstances in which both these conditions coexist.

Estimates of rivals' probable reactions to given price and output decisions are an inescapable incident of oligopoly, and as these are necessarily vague and conjectural, so to a degree must be any conclusions reached by an inquiry into the forces determining entrepreneurial behavior in these circumstances. Nevertheless, an analysis of the situation of particular firms or industries cannot afford to neglect a careful study of these conjectural data and of whatever ascertainable objective data may lie behind them and help to shape decisions. The conjectures of each seller as to the most likely reactions of rival sellers to his own actions become data of the general equilibrium system, and these conjectures may be such as to make impossible any equilibrium, however theoretical, and they must remain largely unknown. It becomes tempting, thus, to assume away these difficulties. Yet may not certain simplified assumptions be constructed which will enable us at once to avoid a hopeless degree of complication in theoretical reasoning and to attain a measurable approach to realism?

Evidence of the feasibility of this procedure may be sought by two methods: empirical case studies and theoretical case studies. My own experience leads me

to the conclusion that both of these methods offer promise of fruitful results, the more so if their interdependence is recognized and they are used in close conjunction.

I may conclude by suggesting to the practitioners of political economy, in the good old sense of that term, that the theory of monopolistic competition should aid in several ways in charting the directions, planning the methods, and defining the objectives of investigations into the actual working of the economic system under modern conditions. If its precepts are partly negative, they are not for that reason less worthy of being heeded.

PAUL T. HOMAN began by noting that the essence of the economic problem upon which public policy has come to be focused in virtue of increasingly evident instability and long-continued depression is how to facilitate readjustment and promote full utilization of resources. This basic problem has been obscured, until recently, at least, by the prevalent terms of analysis devised during a long period of expansion in which the problem of unused resources was not pressing. There now exists, however, the necessity of effecting necessary readjustments in the light of this problem. For the latter purpose, fostering and fortifying monopoly is far from providing a panacea, as is now coming to be recognized. Yet the barriers to economic readjustment are in a considerable degree imbedded in markets in ways which are out of reach of legislative rules against restraint of trade. Hence, the appropriateness of a reconsideration of public policy in the light of the growing awareness of the pervasiveness of monopoly elements in an enterprise economy. Only those forms and degrees of "control of the market" are relevant here, however, which lie within the borders of a territory to which available means of supervision and regulation are applicable.

Some part of the failure of private enterprise to serve the end of fuller use of resources is, and seems likely to continue to be, remediable by prohibitory rules against restraint of trade. The familiar rules may need redefinition, supplementation, or new methods of enforcement. On these matters, there are grounds for differences of opinion, but the Temporary National Economic Committee will doubtless canvass such issues thoroughly and they need not here detain us.

The more positive side of the problem of adjusting policy in the interests of fuller productivity consists of devising special market rules for particular groups of producers. The question presented might be realistically formulated as follows: Upon what basis can associative action among the members of particular market groups be made to serve the designated end of fuller use of resources?

In order to make markets "orderly" in the interests of those operating thereon, there are strong incentives at all times towards collective monopoly. They represent less an effort to make full monopoly profits than to effect a degree of mutual insurance. The fact that has to be faced, however, is that business groups, in moving from a context of expansion to one of recession, are almost uniformly inspired to associative action in ways which heighten, rather than lower, the barriers to the use of available resources. The NRA experience is in point. Are means available to force associative methods of market control into channels of increased, rather than diminished, productiveness?

Caution would suggest a careful governmental study of specific industries

and conferences with industry groups in the effort to discover what developments in organization might be introduced to public advantage. Reflection suggests, however, that prospects of discovering promising expedients are slender in default of the creation of new incentives to increased production. It is easier to see how such incentives might be devised for individual firms than for associative groups. Possibly the taxing power and subsidies might be used to good effect. Or federal incorporation with some manner of public representation upon corporate boards might provide, at least, a deterrent to restrictive policies, possibly also a new range of stimuli for management. It is not inconceivable that associative groups embracing a series of industries, for example, in the building materials and construction field, might be encouraged to take advantage of a certain elasticity in the demand for their products.

The adaptation of the consent decree procedure by the Department of Justice to the elaboration of these, or other, devices for effecting an expanded use of resources has been suggested. While there may be exigencies in which it can be properly employed, it is dubious that the Department of Justice is designed or equipped for such a function. In conclusion, it appears to me that relatively little leeway for voluntary associative action beyond what is now authorized is likely to be, or could usefully be, given. If the government permits such a development it will be mainly in consequence, I believe, of political acceptance of those business and labor attitudes which press for modes of associative action which, in effect, sabotage the enterprise system. There will, in any case, remain the necessity for a "public economy" to redress the failure of the private economy to provide continuity of livelihood.

EDGAR M. HOOVER, JR., recalled that the concept of "cutthroat competition" had passed through three stages of development. Originally, it was associated with the market policies of what were believed to be a small group of large-scale industries, those operating under conditions of diminishing cost. Later, with increasing recognition of the prevalence of overhead costs, the tendency was to extend the area susceptible to market derangement by ruinous price competition to embrace most fields of industry. Today there is a tendency to apply the term cutthroat competition most frequently to the price policies of enterprises of exactly the opposite character from those whose tactics originally gave it currency. It seems to be believed that harassed small-scale manufacturers and tradesmen are the principal source of below-cost price cutting.

The explanation of these phenomena is difficult. Quite definitely, however, it appears not to run in terms of prospective gain from achieving increased efficiency through larger scale operations and lower unit costs. Much less is it to be sought in malicious motives.

Several different criteria of cutthroat competition have been proposed. One is that it is a price policy leading to a rate of return in the given industry which is less than normal. This is unsatisfactory in so far as monopolistic competition has come to pervade the whole industrial scene, for it renders the concept of a normal rate hopelessly vague. Another criterion sets up the duration of losses. In practice, this distinction is not very useful. In default of a better definition, one may consider as "cutthroat" the prices in any industry where the profitability re-

mains for long periods below what may be deemed socially desirable. What these are may now be considered.

First, there is the difficulty of estimating the effects of a change in price upon total receipts and total costs. One firm's downward error in gauging the market with intent to maximize net returns is more likely to spread to other firms than is an upward error. So in the absence of any agreement or tradition for maintaining prices, the difficulty of estimating the relation between costs and returns tends to depress the price. In small-scale, unstandardized, and seasonal industries, determination of demand and costs is inherently difficult, and the low standards of accounting practice and management in these circumstances tend to make the situation worse.

A second factor is the conjunction of conjectural price-making and an unstable price structure on the sellers' side with a substantial element of buyers' control, or oligopsony, in the market. The impact of large-scale buying on certain markets seems patent, e.g., those for rubber tires and for dairy products. But we have no adequate general theory of what happens when individual buyers and individual sellers both have some degree of control over the price, or how market control is divided in these circumstances.

A third factor appears to operate indirectly upon price policy by bringing about chronic overcapacity. This tends to arise from underestimation of supplementary costs, which is reflected in a greater influx of new competitors (not of new capital alone) than would otherwise occur. Somewhat similar results follow from bargain purchases of plant and equipment of defunct enterprises. Low or underestimated supplementary costs tend also to make short-run price policies more aggressive.

Why is not cutthroat competition a temporary and self-correcting phenomenon, however? The previous paragraph affords a partial explanation. Whenever an industry's equipment is relatively durable and specialized the normal competitive catharsis will take a long time. This is especially true if the demand for the product shows a secular decline. Moreover, the professionalization of management under large-scale corporate enterprise has tended to induce reinvestment of earnings without due regard to prospective return thereon. Finally, the very circumstance of instability and high risk in certain fields may attract the more adventurous type of entrepreneur. In a gamble, one man's chances are as good as another's, and there are always some who think their own chances are a little better than the average. The women's shoe industry furnishes an illustration.

Where cutthroat competition arises from ignorance of supplementary costs, little can be said in its defense. But where ignorance of demand reactions is the cause, there are possibly two sides to the question. This may be one important exception to the general rule that business is best conducted in as full a knowledge of the facts as possible.

CHANGING DISTRIBUTION CHANNELS

ROLAND S. VAILE, *Chairman*

Three aspects of changes in distribution channels treated in Dr. Thorp's paper in the morning session were discussed in this round table: "The initiative taken by distributors themselves," by John H. Cover; "The specific effects of the Robinson-Patman Act," by Ewald T. Grether; "The growth and prospects of consumers' co-operatives," by E. R. Bowen.

JOHN H. COVER: The struggle for power, or for existence, in distributive enterprise parallels the contests of a few generations ago in manufacturing. In order that the significance of this struggle may not be underestimated, it is important to list some of the related factors and occurrences: rapid changes in channels of distribution, business organization, and business practices; high costs of merchandising; alignment of forces upon a national basis for obtaining special advantages and protection; use of legislation as a competitive or security device; expansion of monopoly devices (laws, patents and trade-marks, and trade association activities) in fields regarded as desirably competitive (these devices tend to control price, quality, and conditions of sale); potential restricting effect upon consumer purchasing power; prospective increase in unemployment; competition of state and federal governments over trade and commerce jurisdiction.

Preservation of existing channels of distribution protects the wholesaler, broker, and independent retailer. Laws sponsored by these agencies and by some manufacturers are directed against chain stores, mail order houses, department stores, super-markets, price-cutting independent retailers, vertically integrated distributors, and group buying organizations. Other types affected but not attacked directly are consumers' co-operatives, farmers' co-operatives, voluntary wholesaler-retailer groups, and retailer co-operatives.

Legislation sought, and widely enacted, may be classified as follows: resale price maintenance—the "fair trade laws"; regulation of sales below cost—the "unfair practices acts"; regulation of price discrimination, between localities and buyers; and discriminatory taxation—chain store taxes, and special licensing laws.

Code provisions offered much of the inspiration for legislation fixing resale prices and determining costs. The original retail drug code contained these provisions; aiding in its formulation was the Drug Institute, Inc., composed of individuals from the manufacturing and distributive branches of the industry. A vertical code for allied groups, in which the Institute was interested, contained a resale price provision.

Many retail associations and a number of wholesale groups have for years received the financial support of manufacturers—direct aid, advertising allotments for trade papers and for convention space. Assumption by associations of responsibility for policing under the state marketing laws requires additional funds, and it is less troublesome and less public for a manufacturer to contribute to this purpose than to assume direct responsibility for forcing fulfillment of his own contracts.

Illustrative of co-operation of varied groups is the National Grocery Manufacturers of America, Inc., the National Association of Retail Grocers, the National

Voluntary Groups Institute, the National American Wholesale Grocers' Association, the Co-operative Food Distributors of America, and the National Association of Food Chains. This latter Association is proposing a bill to define and prohibit unfair sales, and to fix a minimum markup of "6 per cent of the total cost at retail outlet."

Successful opposition to the establishment of high retail markups, beginning with the Minnesota case fought by the Great Atlantic and Pacific Tea Company, has permitted chain and other mass distributors to appear favorably in the public print as defenders of low prices. By supporting a 6 per cent markup, these large merchandisers place themselves in a favorable competitive position, particularly in those trades in which large numbers of items are included under resale price maintenance contracts. For large turnover and other organizational advantages make 6 per cent adequate to their needs, whereas many small independents would find it impossible to operate under this margin.

Recent signing of an agreement between the American Federation of Labor and the Atlantic and Pacific was referred to in editorials as an effort on the part of the A. and P. to gain labor support against antichain legislation.

EWALD T. GRETHER: The specific, mature effects of the Robinson-Patman Act in the innumerable situations which it may influence cannot be foreseen as yet. It will take more time not only for business, the Federal Trade Commission, and the courts to discover the full meaning of the amendment, but for the trade alignments to become adjusted to the new potentialities.

The Robinson-Patman Act was conceived in the broad conflicts of interest in American industry and trade. In order to fully appreciate the potential rôle of the Act it is necessary to envisage competition in American industry and trade not merely between firms on a given plane (horizontally), as say between retailers, but within the channels of distribution (vertically).

The prime issue in the conflict within the channels of distribution is where dominance will rest. In the horse-and-buggy period (except at the end of the period) wholesalers tended to be the dominating factors in the marketing system. Towards the end of the last century dominance often began to shift towards manufacturers who had succeeded in developing large financial resources and in entrenching themselves firmly in the minds and buying habits of consumers as their trade-marks became well known. More recently, the large-scale retail types, the department, mail order, and chain systems, and organized groups of individual merchants have asserted themselves on the retail end. It is commonly overlooked that these major trade groupings typically are highly class conscious in their attitudes and objectives. In other words, there is an organized, not a haphazard, struggle going on in the channels of distribution. The most significant recent aspects of the movement are the class-conscious demands of the smaller individual dealers who have discovered their political strength. Politically, the Robinson-Patman Act, together with the fair trade, sales below cost, and anti-discrimination statutes of the states reflect this new found political power of organized smaller retailers and the wholesalers dependent upon them.

Besides the major conflicts of interest in the channels of distribution, there are two subsidiary considerations that must be noted for a sound evaluation of the Robinson-Patman Act. First, its legal setting is within the relatively narrow

boundaries of the interlinked laws of restraint of trade and of unfair competition. Second—and herein lies the unique aspect of the Robinson-Patman Act—now, for the first time in federal law, specific attention is directed to monopsony or monopsonistic competition. The essence of the Robinson-Patman Act is the curb that it places upon the exercise of monopolistic buying power as opposed to monopolistic selling power. It is useful to speak of the former as "monopsonistic" power by contrast with monopolistic power in selling.

If the Robinson-Patman Act met the wishes of its political proponents, its chief effect would be a drastic reversal of the trend of the past generation by again shifting the balance of power in the channels of distribution towards the independent wholesaler-retailer bloc. The extent to which this result may appear will be determined by the play of interests in the market and the specific orders and decisions of the Federal Trade Commission and the courts in relation to these conflicting forces.

The evidence to date in the orders and decisions issued indicate that the Federal Trade Commission intends (1) to allow price variations justified by handling and selling cost differences in so far as they can be determined and to prohibit those that are the product of bargaining power so employed as to bring them under jurisdiction, (2) to prohibit price uniformities resulting from combination among sellers, i.e., the antitrust laws are to be enforced and price uniformity *per se* is in itself not to be accepted, (3) to prohibit pseudo brokerage and advertising allowances and payments, (4) to recognize functional discounts but to check their abuse, and (5) to give due weighting to the general purposes and the exceptions and allowances in the Act, especially the limitation of Section 2 to the effects between competitors who are common purchasers of given sellers.

The largest possibilities under the Act and those unique to it are the curbs upon the exercise of monopsonistic bargaining power. Many manufacturers are pleased to have this assistance in working out their higgling relations with large-scale buyers. It seems likely that the most profound ultimate effect of the Act may be to remove that portion of the bargaining advantages of large-scale buyers which cannot be justified either by cost calculations or under the allowances and exceptions under the Act. Of course, this conclusion is much simpler than the play of forces out of which this result must appear. Frequently it will be impossible to disentangle that portion of price differentials traceable merely to bargaining power from other elements. If commodities could be clearly demarcated and if they were produced and marketed separately instead of in assemblies, and if spatial and time factors could be assumed constant, then bargaining differentials would create no problem either because they would be nonexistent or could be isolated and measured. Realistically, one must assume a large element of rough approximation and of error in the procedures employed. But in spite of these difficulties there is no doubt that bargaining relations are greatly affected by the Act.

In so far as evidence is available, it appears that large-scale retailers would not be destroyed even if they lost all of their bargaining advantage. The Federal Trade Commission's *Chain Store Investigation* indicated that only a small portion of the selling price advantage of grocery and drug chain stores could be accounted for by special discounts which now might be banned as bargaining differentials.

The Robinson-Patman Act in itself as interpreted to date does not portend

fundamental changes in the existing distributive pattern. From the standpoint of the public interest it is to be hoped that its prime influence will be to remove merely a small number of widely prevalent unfair buying practices derived from monopsony power or from the normal trading propensity towards some amount of knavery. The chief public hazard is that it may contribute to the trends aimed at freezing the existing distributive pattern in the interests of so-called "price stabilization."

E. R. BOWEN: The topic of this special round table conference is "Changing Distribution Channels." I am to discuss, as a part of that change which is taking place, the "Growth and Prospects of Consumers' Co-operatives in the United States." I shall indicate briefly the causes of our economic diseases, shall describe how consumers' co-operatives and other elements of a co-operative economy will remedy these economic diseases, and conclude with a suggestion as to the prospects of consumers' co-operatives based on their actual growth in other democratic countries. In other words, this presentation will endeavor to cover these four points in a brief and partial way: (1) our economic diseases which require a change in distribution channels; (2) how consumers' co-operatives and other elements of a co-operative economy will remedy our economic diseases; (3) the growth of consumers' co-operatives in the United States; (4) a prediction as to the future prospects of consumers' co-operatives.

The premise of this discussion is that an efficient system of economic organization, based on the fundamental moral and democratic principle of equal rights, must increasingly produce plenty, must distribute that plenty equitably, must provide universal employment, and must democratically distribute ownership and control.

There are in the process of growth in the United States three forms of economic organization which are destined to result increasingly in the lowering of the price level, and three other organizations which will result increasingly in the raising of the pay level, and together eventually become the controlling element in our economy.

The three economic organizations which have to do with lowering prices are: the consumers' co-operative movement in the fields of distribution, production, and services; various forms of co-operative finance, one element of which we now see evolving in what are known as credit unions; and the public ownership of utilities. These cover all types of group economic activities in the fields of industry, finance, and utilities.

The three economic organizations which are developing which have to do with raising the pay level to producers are the various forms of social insurances, labor and professional unions, and farm marketing co-operatives. These cover all the people: social insurances cover the unemployable, aged, young, and sick, and any who are unemployed; labor unions and professional associations cover all employable urban residents; farm marketing co-operatives cover all rural producers.

These six types of economic organizations make up the whole of a new co-operative economy. They might correctly be classified as three types of co-operation—consumer, producer, and public; what are termed consumers' co-operatives and co-operative finance in the field of consumer co-operation; public co-operation

in the form of public ownership and social insurance; and producer co-operation in the form of labor and professional unions and farm marketing co-operatives.

They all have common characteristics in that they are democratically controlled on the basis of voting by persons and not by stock ownership; they are all public service rather than private profit organizations; they are all widely owned by the members in so far as ownership is involved. In other words, they all are of what we correctly term a co-operative nature.

The most accurate statistics available indicate a total amount of purchasing by consumers' co-operatives in the United States of over \$500,000,000. The percentage of total retail business now done co-operatively is over 1 per cent. However, in the field of farm supplies we have reached the point where one-eighth, or 12½ per cent of farm supplies are purchased co-operatively. European experience indicates that the movement is usually able to exert an effective controlling pressure on the general price level of any commodity when it handles about 10 per cent of the volume.

The consumers' co-operative movement desires no subsidy, it opposes government control of co-operatives, it asks only equality of rights. It puts its trust in education and evolution and not in revolution. We believe that co-operatives will and should grow only so rapidly as the people learn by necessity and desire that the democratic principles of the equal rights of all men should be applied to economic affairs.

We predict, with Mrs. Beatrice (Sidney) Webb, that "a century hence, school textbooks and learned treatises will give more space to consumers' co-operation, its constitution and ramifications, than to the rise and fall of political parties." I would use her words in summing up the future prospects of consumers' co-operation, which are applicable to any democratic nation, when she says, "Unless I completely misinterpret the irresistible ground-swell of British democracy, it is this consumers' co-operation in its twofold form of voluntary association of members in what we now know as the co-operative society and obligatory association of citizens in economic enterprises of national as well as local government—all of them in organic connection with an equally ubiquitous organization of the producers by hand or by brain in trade unions, professional associations (and marketing co-operatives) which will constitute the greater part of the social order of a hundred years hence."

FINANCIAL CONTROL OF LARGE-SCALE ENTERPRISE

JAMES WASHINGTON BELL, *Chairman*

The following three aspects of the financial control of large-scale enterprise—the subject of Robert A. Gordon's main paper—were treated: "The Significance of Interlocking Directorates," by DR Scott; "The Location of Economic Control of American Industry," by Gardiner C. Means; "The Rôle of Banking Groups in Corporate Reorganization," by Paul M. O'Leary. A brief treatment of the discussion of the papers is appended.

DR SCOTT: In appraising the economic significance of interlocking directorates we should consider their constructive contribution and not merely their destructive effects.

Modern big business has developed a type of management which runs in terms of a consistent program of policies and is administered by an organized group of executives among whom there is a clear-cut division of responsibilities. In the typical case of such enterprises the director is no longer a responsible representative of the stockholder. This fact is clearly shown by the character of the annual stockholders' meeting. In such an enterprise, also, even the formulation of general policies has become a function of the technical management; so that we find the director who has lost the authority to speak in the name of the stockholder standing helplessly before the technical administration.

However, in spite of this incapacity of the individual director, the power of the board has been multiplied by the magnitude of the volume of assets it controls. And the influence of leading members of the board has been multiplied again by the device of interlocking directorates. The result of this situation is that economic power has been concentrated and personalized.

This drift towards a concentration of personal power is even more spectacular in policies than it is in economics.

If we undertake to meet such a trend in the control of economic affairs by an appeal to the powers of government to enforce a traditional system of economic freedom, we thereby destroy the freedom we wish to perpetuate; we take from economic theory its boasted independence and subordinate economic affairs to political control just as truly as if we were to adopt frankly a totalitarian state.

If at this time we adopt a social policy of *laissez faire* we become the willing or at least resigned victims of a process of disintegration. On the other hand, if by positive action we try to preserve a social order in which a maximum appeal to *laissez faire* is possible, we bring down upon ourselves the very type of social order which we are seeking at all costs to avoid. What other social policy is possible?

We all want to preserve the essential virtues of an individualistic society. We all want to live under a régime of law in the most fundamental sense of the term and not under a government of men such as is indicated by the concentration and personalization of power in current economic and political affairs. How can we realize these desires?

The régime of law which characterized the individualistic period of our culture was achieved by a process of intelligent social adjustment to what was then a new

environment. It cannot be preserved by a forceful preservation of the institutions and social theories which it represented. If we wish to enjoy a régime of law such as our forefathers established, we can do so only by working out one of our own by the process of intelligent adaptation which they used.

The late Professor Thorstein Veblen was an instructive critic of modern business. For a parallel to the rôle of modern business, as he described it, we must go back a century or two before Adam Smith where the engrossers, regratters, fore-stallers, and freebooters of that period rode rough shod over the conventions of the time and established an individualistic competitive economy. The profits which they made frequently were exploitative in character because there was not an effective competitive system to regulate them. Those profits were a social cost of getting the new system of control established. The restrictive laws of the period doubtless were justified on grounds of reducing the social cost of the change but that was not the spirit or the intent embodied in them.

Veblen was wrong in condemning current business profits in contrast with those of the earlier period. Those whom Veblen would have called the buccaneers of big business are now engaged in shaping a new régime of economic control. The profits which Veblen so much begrimed them constitute a social cost of the new régime. Doubtless restrictive legislation is now necessary to reduce the social cost of this new transition but if so its spirit should be in keeping with that limited objective.

Interlocking directorates represent one relatively insignificant feature of the current trend in the business control of economic affairs. More general aspects of the trend are shown by the concentration of personal power and the tendency towards increasing governmental control of business. These are opposing aspects of one situation. What will come out of this situation is yet to be determined but several things should be clear even now. We cannot by a process of compulsion re-establish a traditional system of economic freedom. We should not imitate the error of King Canute and try to sweep back the tide of evolution in the institutional control of economic affairs. We cannot, with safety, put the new wine of current business control into the old bottles of traditional economic theory. It would be unwise to meet the trend towards personal power with a frontal attack by asking ourselves how we can combat it in order to preserve a valued economic heritage of institutions and theories. Rather we should ask ourselves how we can guarantee that the new forms of power will be exercised in accordance with the public interest. When we have worked out the answer to this latter question we shall find ourselves with a new régime of law and the menace of personal power will have disappeared.

GARDINER C. MEANS: In this paper I will go as far as I feel able in fulfilling the promise of its title. I can examine the concept "economic control" and indicate why it seems to me important to establish the location of economic control. I can suggest ways in which we can approach the problem of locating economic control but I cannot go very far in delineating its actual location.

First what do we mean by the term economic control? This is a relatively new phrase in the lexicon of economic analysis. An initial step toward clarifying the concept can be taken by recognizing that economic control is intimately concerned

with economic policy. Professor Mason in his discussion of price and production policies this morning was clearly concerned with economic controls. Professor Gordon started off his definition of his concept "entrepreneurial control" by saying that "entrepreneurial control consists of the active determination of the broad policies of the firm. . . ." Without accepting the precise implications of such a definition, we can see that it points to the close association between control and policy.

The exact way in which control and policy are related is not so clear. There would be, I think, general agreement that every producing unit whether corporation, government agency, partnership or individual has to develop policies with respect to the use of the financial, material, and human resources at its disposal and that it is these policies which fall under the generic term "economic policy." But what is the relation between economic control and such economic policies?

There appear to be two quite different types of concept, to either or both of which the term economic control might appropriately be applied. The first concept is one of relationship, the second one of process. In *The Modern Corporation* we used the term "control" primarily in the sense of a relationship between individuals and groups in an enterprise, speaking of the separation of interest and control and referring to particular groups as having control over an enterprise to the extent that they possessed power to influence its policies. If they exercised such powers, we referred to their action as managing the corporation. Such use of terms most nearly conforms with the usage of the courts in dealing with responsibility within the corporation. This morning Professor Gordon applied the term control to the process of exercising powers over policy, making it essentially synonymous with business leadership.

I bring out this difference in the use of terms, not to start a war as to the "true" meaning of the term control but rather to emphasize the two different concepts to which the term might be applied. Probably in the bulk of cases it will be perfectly immaterial to the sense of the text. Undoubtedly it would be desirable to get agreement as to which concept should bear the title control or agree that it be used to refer to both the relationships and the process, introducing suitable modifiers when ambiguity is likely to arise.

In the present paper I shall use the term economic control or more often its plural form, economic controls, to refer to relationships between individuals or groups and a producing unit such that the former can influence the economic policies of the latter. This does not represent any disagreement with Professor Gordon as to the concepts involved but only a difference in naming them.

But the difference between control as a relationship and control as a process is not the only difference likely to arise in using the term control. An important difference in the scope of the term may result from differences in the conception of the process of policy formation. Thus Professor Gordon restricts his application of the term "entrepreneurial control" to the "determination of the broad policies of a firm." He narrows down the concept control to major policies and suggests that some one individual or small group "determine" these policies. The concept which he has developed seems more nearly that of business leadership on whom the various pressures influencing policy impinge rather than that of the more diffuse controls.

I think any of you who are familiar with the process of policy formation are aware that policy in any producing unit is the resultant of many influences. Each person who influences policy may be said to have some measure of control over policy. If many persons or groups have participated in the formation of policy, it is not appropriate to say that any one individual or group determines policy even though they may have had a dominant influence on policy. It may be appropriate to refer to a particular group as "the" controlling group in a particular situation since they hold a dominant position but in doing this it is essential to remember that all control does not lie in their hands. Other individuals and groups are in a position to exercise some control over policy, often very much more control than is generally realized. If the term control is to be narrowed down first to cover only major policies and second to cover only the major interests influencing these it seems to me likely to lose much of the significance which it would otherwise have for the analysis of the major economic problems of the day.

Finally a difference in scope of the term economic controls might arise from the inclusion or exclusion of market controls. In any concrete economic situation some of the controls influencing policy are likely to arise from market phenomena while other controls are of a nonmarket character. In the remainder of this paper economic controls will be used in the broadest possible sense, distinguishing between market controls and nonmarket controls when occasion arises. The term thus will be used to cover all aspects of economic policy, all individuals or groups in a position to influence economic policies and includes both market and non-market controls. Finally, it refers to the relationship between individuals as they influence economic policy rather than the process of exercising this influence.

To me the great importance of this broad conception of economic controls lies in the opportunity it gives for building a synthesis of both market and nonmarket economic phenomena and for more closely relating the science of economics with political science.

The first of these possibilities, the synthesis of market and nonmarket phenomena, I can indicate in a few words though the task of actually developing such a synthesis is likely to take many years and the work of many people. Economists have a thoroughly developed set of concepts with which to analyze market phenomena. Supply, demand, price, and a host of other terms serve to name those concepts with which we analyze the operations of markets. Using these concepts, economists have created abstract pictures of how an economy might be expected to operate if economic organization were brought about solely through the operation of perfect competition and free markets. But we have become increasingly aware of the extent to which economic organization is brought about through other than market influences and are no longer satisfied with the simplified market picture of economic activity as a whole. In this situation some economists have stuck to market analysis, claiming that phenomena outside the market are not appropriate subject matters for an economist. Others have turned their attention to the analysis of nonmarket phenomena. But in this new field the tools of analysis fashioned for the description of the market do not serve and we have started to develop new tools of which the concepts control, interest, and policy are clear examples.

Now it is a striking fact that while the analytical tools developed for market analysis are not suitable for the analysis of nonmarket phenomena, the new tools control, interest, and policy are quite as appropriate to the analysis of market phenomena as of nonmarket phenomena. We can talk of the production policies adopted by a particular wheat farmer and the extent to which they are subject to the control of the market. And since the market is only a shorthand term for the individuals and groups interested in acquiring or disposing of wheat and other goods we are really saying how much are the production policies adopted by the wheat farmer influenced by the production of wheat by others, their desire to acquire wheat and so on. Thus though it is not possible to analyze economic organization within a corporation in terms of buying and selling, it is possible to analyze market phenomena in terms of policies and controls. The new system of concepts appears to be more basic than the system of market concepts.

The importance of this fact lies in the possibility of tying together market and nonmarket phenomena into a single system. This would not mean the jettisoning of market concepts but the building of market concepts into a broader analysis of economic controls. Thus in analyzing the actual policies adopted by a particular corporation it would be appropriate to bring into the foreground all of the social data on factors which lead to the adoption of a particular policy. The particular wage rates arrived at may have been a resultant of union pressure, the pressure of fellow members of the chamber of commerce, the supply of labor, demand for the corporation's product, a telephone call from an important creditor, and a dozen other influences. Each of the persons or groups who had an influence on policy had some measure of control over the enterprise. In such an analysis the influence of individuals and groups whose influence reaches the particular enterprise only in the impersonal relationship of the market can be given the same status as influences not operating through the market. Both are placed on the same conceptual footing through the analysis of controls. The question of how far such a synthesis of market and nonmarket phenomena can be carried must be left to the future.

The second possibility opened up by the very broad conception of economic controls already suggested is that if a closer relation between economists and political scientists restricted their analysis to power in the state, there was no common meeting ground. Neither even remotely touched the analysis of the other and a huge area of human organization lying outside of both the state and the market remained a no man's land unanalyzed by either. But when an economist analyzes these nonmarket factors in terms of control and the political scientist, as many are beginning to do, analyzes the same area with the tools of analysis formerly applied only to the state, the two sciences are coming very close together. The political scientist's concept of power is closely akin to the control concept emphasized in this paper though I believe they are significantly different. It may be that on the basis of the analysis of economic controls and the analysis of political powers the two sciences can be brought to the point where the gap between them can be bridged and a new and larger synthesis be developed.

In the analysis of the no man's land, the two sciences have quite different rôles to play. It is clearly the function of the economist to investigate the effect of the exercise of controls on the use of resources and only incidentally how controls are

acquired or lost. The political scientist on the other hand is concerned with the way power is acquired, maintained, or lost and is only incidentally concerned with the effect on the use of resources which develops from the exercise of power. Thus in the no man's land the functions of the two sciences are complementary, not duplicating. Presumably, if a larger synthesis were developed, the same complementary functions would be performed.

I do not need to emphasize the importance of nonmarket controls in our present economy. The great importance of large corporations, the extensive government regulation, growing union organization, and the decline in the relative importance of market controlled agriculture all point to the importance of nonmarket controls. But once this is accepted what is our next move?

There seem to me to be two appropriate next steps. First, we need the intensive analysis of specific control situations such as are involved in some of the papers given today. But equally important, we need to delineate what might be called the structure of controls. If there were no controls except those exercised through the market, there would be no problem of the structure of controls. But non-market controls are not all of equal economic significance. Through nonmarket organization, pyramids of control have been developed to the point that often a policy decision within a single economic unit can affect significantly the economic well-being of hundreds of thousands or even millions of individuals. The non-market controls in such cases are vastly more important than the same type of nonmarket controls in the case of a minor enterprise. The economic policy decisions in the larger corporations and government units have come to be of major importance in terms of the whole economy, and market controls leave a wide latitude within which nonmarket controls can influence policy. It should be possible to locate the more important points of policy formation and establish the location of the major controls in each case. Such an undertaking should result in an outline of the structure of controls, some threads of control running to important banking or financial houses, some to security holders, some to the management of enterprise, some to labor organizations, and some to government.

In the analysis of the structure of controls it would be important to distinguish between several different types of policy and the controls associated with each. Professor Mason spoke this morning on price and production policies. But price and production policies cover only one phase of the operating activity of an enterprise. Wage and other labor policies, policies with respect to the purchase of raw materials and services, and other lesser policies all combine with price and production policies to give what might be called operating policy.

A second phase of activity involving a more or less separate process of policy formation is that concerned with the creation of new plants or reconstruction of old and the acquisition of new equipment. Policies with respect to additions to physical plant are necessarily closely interlocked with operating policies but the problems involved in the two types of policy are to a very considerable extent different. Likewise the controls involved in the two types of policy formation are often quite different. As a rule the policies involving new capital formation are likely to be more thoroughly scrutinized by various groups having property interests than are operating policies since new capital formation conditions future activity to a greater extent than current operations.

Just what name should be given to this type of policy is not clear. The term capital policy would be inappropriate since the term capital is already attached to the financial aspects of a corporation; physical capital policy is heavy and perhaps would be thought to include inventory changes; capital formation policy has the same two objections; plant policy does not necessarily imply equipment and might tend to convey an idea of operations. Until a better term has been suggested I will use the phrase "new-plant-and-equipment policy."

In practice, the distinction between operating policy and new-plant-and-equipment policy is well recognized but there is not a sharp qualitative difference between them. They both involve the physical activity of using resources, including plant and man-power, to produce goods. For this reason it would be convenient to have a term which would cover both and I suggest the term "industrial policy" which would distinguish policy related to physical production from policy related to financial activity and usually referred to as financial or fiscal policy.

Financial policy needs no discussion. It is concerned with the issuance and retirement of securities, the payment or nonpayment of dividends and the numerous other matters concerning the flow of money into and out of the hands of any particular enterprise. As Professor Gordon has clearly pointed out, controls related to this type of policy tend to lie to a significant extent with financial institutions.

There is another area of policy formation which has to do with institutional arrangements and might be referred to as institutional policy. Policies with respect to these institutional arrangements cover both the internal organization of a producing unit and the external relationship such as with trade associations, financial houses, and government.

Finally, there is the area of policy concerned with the problem of who occupies what positions of authority and responsibility. In the lower ranges of a large enterprise such policy usually comes under the head of "personal policy" but this involves too narrow a conception for our purposes since we are concerned particularly with the policies and controls that affect the filling of the top positions both in corporate and government organization. I suggest no name for this who-occupies-what-type of policy. Perhaps this subject lies in the field of the political scientists and could more easily be named by them.

All of these types of policy, industrial, financial, institutional, and so on, together make up the economic policies with which economic controls are concerned. An adequate outline of the structure of controls would indicate the location of the controls related to each of these types of policy.

If we could give vitality and precision to a picture of the structure of controls we would have gone a long way toward understanding our failure to make effective use of our national resources and would have established a basis for improving that use.

PAUL M. O'LEARY: As Professor Gordon pointed out this morning, bankers have exercised a high degree of control over corporate reorganizations in the United States. But with the recent enactment of the Chandler Amendments to the Federal Bankruptcy Act such complete (though "sporadic") control will be

greatly curtailed. It is clearly the intent of these amendments to reduce the rôle of banking groups in reorganizations to that merely of offering suggestions to the trustees and judges who really are to draw the plans of reorganization. Even in offering suggestions committees must make certain disclosures as to whom they represent and the amount and time of acquisition of the securities represented. Their compensation is subjected to the scrutiny and regulation of the court and their trading privileges during reorganization are severely curtailed. Most of the "emoluments of control" seem to be gone. The underwriting of new security issues under reorganization plans is still open to bankers but the "inside track" to the underwriting privilege seems to have been blocked. Scrutiny of such new issues can now be cold blooded and unbiased, which it should be.

In general we are acting wisely in transferring control of corporate reorganizations from private banking groups to public agencies. If the process of recasting corporate financial structures is to be facilitated by enabling plans to be effected which deal arbitrarily and summarily with dissenting minorities it is absolutely necessary that responsible public agencies replace private financiers in control of the machinery of reorganization. But we must remember that we do not solve a social problem when we simply turn it over to public agencies for solution. We merely change the location of its solution. The "disinterested trustees," judges, and administrative commissions must be equipped to fulfill their responsibilities. Some financial knowledge and acumen is necessary to the effecting of a "good" reorganization, though perhaps not as much as bankers have liked to have laymen think. Public agencies should be able to effect better reorganizations than bankers, and they should be able to do so more cheaply than bankers. Whether they will do so remains to be seen.

The Chandler Amendments also strike at the use of control of reorganizations by bankers to insure themselves of some measure of continuing control in the corporation concerned. They make it very difficult, if not impossible, for bankers to get into reorganization plans various devices such as banker representation on boards of directors, banker designation of principal executive officers, voting trusts the members of which are selected by bankers, and restrictions on the voting power of certain classes of new stock.

The results of the Chandler Amendments cannot be fully known until we have several years of experience in actual cases. Judicial interpretation sometimes does odd things to statutory enactments. It is possible, however, that reorganizations will become more drastic in their pruning away of financial dead wood from corporate structures. Public agencies will have less reason to try to keep all classes of security holders happy than bankers have had. They will seldom have to think of junior equity holders as potential customers for new issues being sold to raise cash to pay off dissenters. Absolute instead of relative priority will predominate. Finally, it is possible that public agencies will decide to liquidate relatively small corporations whose assets are not too highly specialized where bankers might shun liquidation in favor of maintaining corporate existence and the emoluments that go with it. The entrepreneurship of bankers in reorganizations has frequently not been consistent functionally with the entrepreneurship of competitive economic theory.

In the discussion which ensued it was pointed out from Professor Scott's paper

that the structure of modern corporate enterprises has become complex and collective rather than individual; and that stockholders no longer control, neither do directors. In fact, interlocking directorates are relatively insignificant in the matter of control and management has become a separate profession. Dr. Means seeks to define control so that its location may be more accurately determined. And Professor O'Leary cites a legislative effort to regulate power and control in the Chandler Amendments to the Federal Bankruptcy Act.

In reply to Dr. Means's definition of control, Professor Gordon stated:

My concept of entrepreneurial control originates in an analysis of the productive system. The operation of the productive process obviously requires the guiding and integrating force of business leadership. The need for this integrating and directing force is independent of the legal forms which business enterprise may take or of the nature of the interest groups which may seek to acquire power over the firm. It is to this function of business leadership that I refer when I speak of "entrepreneurial control." Mr. Means would use the term "control" to mean what I have referred to as "power," and he speaks of "economic controls" and control groups in connection with what I have called the interest groups or interest segments. I am afraid that this usage will tend to exaggerate the actual decision-making and policy-forming activities of these interest groups and badly underestimate the tremendous powers—from the point of view of actual control of the productive process—of the managements of our large corporations. It does not seem to me that we get very far by glibly classing one company as "minority controlled" and another as "management controlled" or "banker controlled." Almost invariably, when we do this, what we mean is that the minority, management, or banker interest has relatively greater power, and is in a position to wield more influence, than the other interest segments; it makes up an important part of the milieu within which the entrepreneur operates. But such treatment tells us little about the actual effects of these "controls" on the economic process; the minority interest may be potentially powerful but altogether passive or may influence policies only at certain times. What we need to do is to locate economic power and then to see how and when and why it is translated into active control. To call this power "control" is, in a sense, to assume the answer we are seeking.

Professor S. E. Howard made a plea for a practical approach to the problem when he pointed out that we must in fact locate power and responsibility if the many controls are not to "get out of control." He cited instances of court decisions blocking the Massachusetts Trust as a means of evading responsibilities of partnerships and of the abandonment of double liability of bank stockholders on the ground that responsibility could no longer be centered there.

THE PURE THEORY OF PRODUCTION

JOSEPH A. SCHUMPETER, *Chairman*

The following papers were presented at this round table: "A Three-Dimensional Representation of the Factors of Production and Their Remuneration, Marginally and Residually," by Irving Fisher; "Measuring the Mobility of the Factors of Production,"¹ by Jacob Marschak; "A Restatement of the Theory of Cost and Production with Emphasis on Its Operational Aspects," by Paul A. Samuelson. Summaries are herewith presented.

IRVING FISHER: Three-dimensional representation has a double usefulness. It helps the classroom student to see, literally to see with his eyes, the truth of the following four propositions, which are not easy for him to see in any other way:

1. A law of diminishing returns may exist for each separate factor of production while at the same time a law of proportionality may hold true for all the factors taken together in a composite.

2. If this is the case, the remuneration of each factor according to its marginal contribution to the product will leave no residual unaccounted for, but if this is not the case there must be a residual.

3. Given a law of proportionality for all factors combined and a law of diminishing returns for one factor or group of factors alone, it follows that the remaining factors grouped in a composite must be subject to a law of diminishing returns; moreover that law must be of a certain specified type as determined by the hypothesis just stated.

4. Under the same conditions either of the two laws of diminishing return applies without change, no matter what the assumed magnitude of the other co-ordinate factor or group may be.

The other usefulness of this three-dimensional construction is in helping clarify the thoughts of economic thinkers themselves; for correct visual pictures usually yield the clearest concepts.

JACOB MARSCHAK: Any definition of the mobility of a production factor, e.g., labor, must take into account, not only the actual movement of the factor, per unit of time, between any two regions, or industries, but also the discrepancy between the reward rates earned in each of them. With a given discrepancy of reward rates the mobility is higher as the amounts of the factor moving from one region or industry into another become larger.

In static economic theory mobility is assumed to be infinite; equalization of reward rates through migration does not require time. In the dynamic analysis this assumption must be dropped, and a finite mobility measured. Let p_a and p_b be the prices (reward rates) of the same factor in two regions, or industries, A and B; and let m_{ab} be the net annual migration of the factor between A and B. Then the quotient

¹ Details referring to some parts of this paper have been published (jointly with Helen Makower and H. W. Robinson) in the *Oxford Economic Papers* No. 1 (Oxford University Press, 1938). Further publications are forthcoming.

$$\frac{m_{ab}}{p_a - p_b}$$

might be suggested as a mobility measure. To make the measure independent of reward units it is advisable, however, to use the relative rather than the absolute difference between reward rates. Further, the amount of the factor already available in each region, or industry (denoted by, say, a and b respectively) must be considered; with a given reward discrepancy, small regions naturally absorb or repel smaller amounts than large regions. The suggested definition of mobility is thus

$$\lambda_{ab} = \frac{m_{ab}}{ab} : \frac{p_a - p_b}{p_a}$$

(for reasons of symmetry we might also choose to divide the difference by $p_a + p_b$ rather than by p_a).

This is a definition only. It is not claimed that λ_{ab} is the same as, say λ_{ac} . When we measure sugar consumption per head, to make international or historical comparisons possible, we do not claim that population is the only relevant determinant; we merely assume that it is an important cause, which needs elimination to reveal other causes. Better approximations may be obtained by giving the higher and lower reward rates various weights thus investigating whether the "pull" or the "push" is stronger; also, by trying to establish whether the migration, instead of growing in proportion to the reward discrepancy, remains negligible so long as the latter's numerical value remains below a certain threshold. More important than these refinements is, however, the measuring of the time lag between reward discrepancy and migration; and of the influence of distance (formulas are given in the account of this paper written for *Econometrica*).

Regional prosperity indices as devised, for the United States, by Carter Goodrich and his collaborators, and, for United Kingdom, by Cecil Chrisholm and others, might be used to measure regional reward discrepancies for labor. British migration seems, however, to be as strong, if not stronger, correlated with employment rates as with average earnings per head (either including or excluding the dole). The chance of getting a job seems, for the would-be migrant, to be a more important psychic reward than a wage increase. Whatever the explanation, the fact itself enables us to use employment rates as relevant reward indices. To measure migration various materials were used: (1) a count of insured workers in Oxford according to their county of origin; (2) a similar count (official sample) for each of the eight large "Divisions" of the British Ministry of Labour; (3) registers of current transfers of "unemployment insurance claim units" to and from Oxford; (4) net changes in the total insured population, by counties, corrected for new entries and retirements or deaths; (5) the same for the whole population, as estimated by the Registrar General. Material "1" and "2" is cumulative and therefore not usable for studying changes in time; material "4" and "5," on the other hand, does not give the origin of migration and cannot be used for distance studies. The two kinds of material complete each other.

By a logarithmic regression of mobilities on distance a pretty reliable "elasticity of migration on distance," lying between 1.5 and 2.0, was found. The mobility

fluctuations remaining after eliminating distance are mainly explained by the industrial structure of various counties. Thus the interregional mobility depends on the mobility between various industries involved. To study this interindustrial mobility, material analogous to "3," "4," and "5" is available.

Material "3," "4," "5" helped to measure the time lag mentioned above; it lies between a half and one year. The same material showed changes of mobility through time; this was much smaller after the slump of 1931 than in the five preceding years. The explanation seems to lie in the increased proportion of long-period unemployed who (as indicated by a comparison of a sample of Welsh immigrants into Oxford with the unemployment structure in Wales) cannot easily afford the risks and costs of migration.

An analogous study of capital mobility (between industries) would require, besides profit data, figures of net investments by industries, similar to material "5."

PAUL A. SAMUELSON: In standard economic works there is often no clear and correct statement of the relationship between the production function and the cost curve; even in the few places where a reasonably correct account of the conditions of equilibrium is to be found, there is no attempt to derive from these conditions theorems of operational significance. The conditions of equilibrium imposed from within the firm by the attempt to maximize profits require (1) that any output which is to be produced must be produced at the lowest possible total expenditure and (2) that out of all possible outputs, that output will be selected which maximizes profits. Under proper assumptions of continuity, the first condition requires that all factor prices, taken as given by the firm, be equal to marginal cost times marginal physical productivities. The second condition requires that marginal cost be equal to marginal revenue. In the general case, including continuity as a special instance, the conditions of equilibrium can be simply stated in terms of finite inequalities. These are easily shown to yield unambiguous, meaningful restrictions upon price-quantity behavior. The condition that a firm earn no profits cannot be deduced from any internal condition of equilibrium, but is realized, if at all, only through the operation of free entry.

The speaker then discussed the relation of this to homogeneity of the production function, and to Walras' marginal productivity theorems.

THE CHANGING CHARACTER OF AMERICAN INDUSTRIAL RELATIONS

By SUMNER H. SLICHTER
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I

Three times since the turn of the century a major effort has been made to induce American employers voluntarily to base their labor policy upon the recognition of trade unions and the acceptance of collective bargaining, and three times the attempt has failed.¹ The result has been the Wagner Act which not only prohibits employers from interfering with the organization of their workers but also imposes on employers the obligation to bargain with representatives of a proper bargaining unit. Thus the determination of the fundamental labor policy of American industry has been taken from employers and has been made a matter of public instead of private decision.² Although the Wagner Act may be amended in superficial respects, there are no signs that the country in the foreseeable future is likely to change the fundamental policy of the Act.³

The new public policy may be expected to have profound effects upon the labor movement, the operation of industry, the functioning of our econ-

¹The first effort was made about 1898 to 1902 under the leadership of the National Civic Federation, Mark Hanna, and other business leaders. The second effort was made by President Wilson in the fall of 1919. His Industrial Conference endeavored to develop into a form acceptable to business and labor alike the principles of employer-employee relations temporarily accepted during the war. It failed because the representatives of business insisted upon the right of employers to start company unions. The third effort was represented by Section 7a of the National Recovery Act which sought to pledge employers to the principle of noninterference with the organization of their workers. Note that in 1926 the employers and unions in the railroad industry did succeed in agreeing upon the terms of a fundamental labor policy for the industry. The result was the Railway Labor Act of 1926.

²Small wonder that this attempt to change by act of Congress some of the most firmly established mores of American industry has been difficult to administer. The Wagner Act, however, has been enforced with surprising effectiveness.

³Underlying the change in public policy is the change in the composition of the working force of American industry. Immigration has virtually ceased. At the same time the number of high school graduates has increased twenty-five fold since 1890. Indeed, slightly more than half of the children in this country now complete a high school education and almost all of them have two or three years in high school. Such workers may or may not desire to form unions, but they are quite insistent that they may be permitted to have unions in case they wish them. It outrages their sense of justice when the employer discharges some one because he tries to form a union. Evidence of the change in community sentiment on this point is found in the statements of policy of many employers asserting that the management will not discriminate against any employee for joining a union. Such statements are found in many employee representation plans adopted in the period 1918 to 1920. It was the failure of business in general, however, to perceive the change in public opinion and its persistent effort to enforce a labor policy of which the public disapproved that eventually led the government to take the determination of the fundamental labor policy of American industry out of the hands of employers and to make it a matter of public policy.

omy, and even upon our political institutions.⁴ It is not my purpose, however, to explore the probable consequences of collective bargaining, because these will depend upon the policies that are pursued by each side. The immediate problem that confronts us is one of making collective bargaining work. Collective bargaining has two principal aspects. First, it is a method of introducing civil rights into industry; that is, of requiring that management be conducted by rule rather than by arbitrary decision. Second, it is a method of price fixing—fixing the price of labor. The problem of making it work, therefore, may be defined as the problem (1) of introducing civil rights into industry, and (2) of fixing the price of labor in such a manner as to increase the national income—or at least so as not to retard its increase. That is the problem to which I invite your attention.

II

The introduction of civil rights into industry raises two principal problems: (1) the preservation of a proper balance between the employer's freedom to manage his plant and the protection of workers from arbitrary management; (2) the avoidance of rules which become obsolete. If the management is given too much freedom, hostile employers may take advantage of it to destroy the union. If the management is too severely restricted in rewarding efficiency or in discarding old methods of production, collective bargaining becomes a method of protecting the old against the new, of retarding technological change, and of protecting vested interests in obsolete methods. Thus it becomes a method of keeping down the standard of living. Railroading is a conspicuous illustration of an industry in which changes in the location of plant, the type of equipment, and methods of operation have been substantially restricted by the terms of trade agreements and union-sponsored statutes. Many of these restrictions are easily defended, but let anyone who doubts the seriousness of some of them note the obstacles (some imposed by statute and some by trade agreement) which confront railroads which wish to combine terminals, to pool traffic, or to meet truck competition by running shorter, faster, or lighter trains, or by having road crews perform yard service. The history of collective bargaining in this country is full of instances of unions, such as the old window glass workers, the cigarmakers, or the upholstery weavers, which

⁴ It may, for example, compel the labor movement to abandon its traditional policy of awarding exclusive jurisdiction over particular groups of workers to a given union and to adopt the policy of the British Trade Union Congress that no union has the exclusive right to organize any class of workers. Depending upon the nature of the working rules adopted, it may enhance or diminish the ability of industry to adapt itself to changes in conditions. Depending upon whether a good or bad job is done in setting the price of labor, it may either diminish or increase the volume of unemployment and, therefore, raise or lower the standard of living. Finally, it may be either a bulwark or a threat to democratic institutions. By spreading democratic habits of thought into industry, it may broaden the acceptance of the democratic way of life. On the other hand, by retarding the expansion of industry, it may impair the very foundations upon which political democracy rests.

destroyed themselves or made themselves weak by imposing excessive restrictions upon employers.

There are several reasons why trade agreements in American industry have tended to develop into long and complicated documents which, in the course of time, were bound to contain many obsolete rules. The most important one has been the fear of the men that the employer would destroy their unions by discriminating against its most active members—a natural result of the great organizing difficulties experienced by unions in this country. Consequently, unions have felt it necessary to restrict the employer's discretion at every point where he might discriminate. A second reason for complicated agreements has been the lack of effective managerial control of department heads, with the result that favoritism rather than efficiency has determined many promotions and layoffs. A third reason has been the tendency of some employers to keep unions weak by making it difficult for them to get prompt and satisfactory adjustment of grievances. In some instances, this failure has led employers to deny redress where the agreement contained no specific rule governing the issue. A fourth reason for detailed and complicated agreements has been the attempt of unions to meet technological and market changes by sponsoring make-work rules rather than pursuing a policy of adjustment. The primary effect of a policy of restriction is to promote the security of the group, but the secondary effect is to undermine security of the group. Hence, in a rapidly changing world real security is only achieved by pursuing a policy of adjustment. Nevertheless, it is natural that some unions (particularly inexperienced ones) should base their policies upon the immediate rather than the long-run interests of their members.

There is danger that instead of profiting from the mistakes of the past we shall repeat these mistakes on a larger scale. Most of the new unions are deeply concerned over their existence and must fight hard for restrictions upon discrimination by employers. Furthermore, the new agreements are being developed rapidly and usually with little understanding by either side that in settling specific issues they are unwittingly settling matters of basic policy. Indeed, many new agreements are more complicated and elaborate than agreements (such as those in the glass bottle or the flint glass industry) which have been in existence for fifty years. The tendency toward elaborate agreements is well illustrated by the recent development of seniority rules. Among 387 predepression agreements, seniority rules were found in only 117; but among 300 agreements made since 1933, seniority rules were found in 171. Let me assure you that it is not an accident that strong unions such as the United Mine Workers, the flint glass workers, the molders, the glass bottle blowers, the potters, the women's garment workers, or the men's clothing workers, have made little or no use of seniority.⁵

⁵ In these samples, agreements from the building trades were excluded because it was known that they almost never contained regulations of layoff procedure.

It is not an exaggeration, however, to say that at the present time virtually no one either inside the labor movement or out of it knows very much about seniority, particularly when applied to factory industries. The only safe procedure is to develop policies by the case method.⁶

A few unions, such as the Amalgamated Clothing Workers, the hosiery workers, and the Steel Workers' Organizing Committee, have made the maintenance of short, simple, and flexible agreements a matter of definite union policy. The leaders of these organizations understand that they can protect the security of their members in a rapidly changing world only by pursuing a policy of adjustment and that elaborate and detailed agreements hinder the pursuit of a policy of adjustment. Curiously enough, however, thinking on this matter seems to be much farther advanced among unions than among employers. Indeed, few employers seem to have made the promotion of simplicity and flexibility in trade agreements a definite objective.

What policies are indicated if trade agreements are to be kept short, simple, and flexible and if workers are to be protected against arbitrary management by the administrative method of settling individual cases as they arise in the light of particular facts rather than by the legislative method of spelling out rules in advance? First, let the employer eliminate the issue of union status, either by encouraging membership in the trade union or by granting the closed shop. To most American employers the "closed shop" is a symbol for union domination. As a matter of fact, the employer is likely to have more freedom in a closed shop or its equivalent than in one where the union is uncertain of its status.⁷ Instructive on this point is an analysis of the restrictions on layoffs in 300 agreements of which 173 provided for a closed shop and 127 for the open shop. Among the open shop agreements 109, or 85.8 per cent, restricted the employer's freedom to make layoffs but only 93, or 53.7 per cent, of the closed shop agreements contained similar restrictions. Second, let the management develop effective control over the decisions of secondary executives for the purpose of assuring that these decisions are either based upon objective facts or, where judg-

⁶ Most employers, for example, at present are strongly in favor of departmental seniority rules. The day will come when these employers will wish that they had never restricted the flexibility of their operations by surrounding each department with a seniority wall. Many unions, which think that they are protecting their existence by seniority rules, have adopted these rules in such unqualified form as to threaten the life of the union. Observe that where frequent violent fluctuations of employment occur, as in the highly seasonal garment industries, seniority has the effect of dividing the workers into two groups—those which bear the full burden of unemployment and those which have steady work at the expense of the others. This is one reason why unions in seasonal industries have found it necessary to avoid seniority rules except in a severely restricted form—as when dealing with the problem of overcrowded sections or considering permanent layoffs for other reasons.

⁷ In the latter, the union must view with extreme suspicion every decision which favors a nonmember as against a member. When all employees are members, the union's interest in the employer's decisions becomes of substantially less importance.

ment is unavoidable, upon carefully reviewed judgment. This will require substantially better records of individual employee performance than have been customary under nonunion conditions. Third, let management plan technological changes well in advance and introduce them gradually. Fourth, let both sides do a good job of setting the price of labor. One source of make-work and restrictive rules has been the attempt of unions to provide work for men who have lost their jobs because their labor has been improperly priced. Fifth, let both sides develop union-management co-operation for the purpose of keeping costs in union plants from becoming too high in relation to costs in nonunion plants. Excessive costs in union plants which produce unemployment among union members are another source of make-work and restrictive rules. Finally, let management take particular care that unions are satisfied that the administrative method gives them an adequate opportunity to get their cases heard and to protect the interests of their members. Arrangements for adjusting differences are more important than the specific rules in trade agreements, and agreements cannot be kept simple unless the machinery for adjusting cases works smoothly.⁸

III

Collective bargaining is a form of price fixing—a way of fixing the price of labor. It introduces a revolutionary change in the relationship between employment and the price of labor. Employment must adjust itself to the price of labor rather than the price of labor to employment. With five or six million men in trade unions, collective bargaining represents price fixing on a scale large enough to have important repercussions upon our economy. By skillful pricing of labor we can add to employment and production; by unskillful pricing, we can subtract from employment and production. It is probable that the pressure of unions for higher wages will accelerate technological change. It is probably inevitable that collective bargaining will produce some maldistribution of resources. It is probable, but not certain, that collective bargaining will limit investment opportunities. Whether collective bargaining at the end of a given period has raised or lowered the standard of living will depend upon whether its tendency to accelerate technological change has offset (1) its tendency to produce some maldistribution of resources and (2) its possible tendency to limit the volume of investment. The subsequent discussion will deal with these two topics.

I have said that collective bargaining may be expected to produce some

⁸ Notice the bearing that all of this has upon the proposal, frequently made by employers' associations, that trade agreements be made enforceable by law. The step has already been taken in this country with respect to agreements on the railroads. It is, I believe, a backward step. It takes away from the parties the right to interpret their own agreement and places this responsibility in a court of law. Thus the parties are hampered in adjusting the interpretation of their agreements to changes in industrial conditions.

maldistribution of resources, but examination of the marketing policies of trade unions suggests that this maldistribution has been greater than it need be. There are three principal reasons for this belief: (1) the tendency of many trade unions to underestimate the elasticity in the demand for labor; (2) their failure to determine carefully the effect of wage differentials in union and nonunion plants upon the demand for union labor; and (3) the failure of some unions to adjust wages to changes in markets and technology.

Most unions assume that they can raise wages by moderate amounts with little or no effect upon employment. They are probably right, provided a short enough time is taken into consideration. There are several reasons, however, for concluding that the plant demand for labor is quite elastic when periods of several years are involved.⁹ One is competition between the old and the new—the most pervasive form of competition in our economy and the one most completely neglected in economic treatises.¹⁰ A second is the ever growing pervasiveness of product competition.¹¹ A third is the rise of large buyers among both retailers and manufacturers who purchase to their own specifications from the lowest bidder (often doing the development work on the product themselves). In competition for the business of such buyers small differences in costs are of decisive importance. A fourth is the rapid spread of organized industrial research with its tendency to increase the elasticity of substitution both between products and between factors of production.¹² As the technical schools turn out an increasing number of better trained men, the elasticity of substitution will continue to increase.

⁹ As a matter of fact, there is undoubtedly a marked difference in the elasticity in the demand for most products with the lapse of relatively short periods of time. This fact has not been adequately recognized by business enterprises and, consequently, has not affected selling policies as much as it should.

¹⁰ The competition between the old and the new is not confined to industrial equipment or other durable goods. The NRA discovered that old hair cuts were in competition with new hair cuts and that if the price was put above fifty cents, people let their hair grow longer. The NRA also discovered that a dirty suit competed with a clean suit and that if the price of cleaning were substantially raised, suits are cleaned much less frequently. Old cars compete with new cars, old furniture with new furniture, old houses with new houses, and an old coat of paint on a house with a new coat. If one is particular about the appearance of his house, he may have it painted every four years, but sufficient protection is usually achieved if it is painted about every six—a great difference in the demand for painting.

¹¹ Paper containers compete with wood, cotton, burlap, glass; aluminum competes with steel and copper; wood competes with concrete, brick, stone, and other materials; plaster competes with ply-wood and wallboard; letter press printing competes with other types of printing some of which are making heavy inroads upon it; coal competes with oil; trucks and buses with railroads. Numerous durable consumers goods compete with each other for the eight to twelve billion dollars a year that consumers spend on durable goods.

¹² Elasticity of substitution is usually defined in terms of constant technology and refers simply to the changes in the proportions with which factors of production are combined when their relative prices change. I am using the expression above in a very different sense to mean the capacity of industry to change the proportions in which products or factors are used by making technological changes in response to changes in price relationships.

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When trade unions underestimate the elasticity in the demand for labor, the handicap imposed on union employers and hence the unemployment among union members are greater than they otherwise would be.¹³ Ultimately the unemployment of men attached to union plants will cause some of them to drift into the nonunion part of the industry and unemployment will take the form of capital unemployment in union plants rather than labor unemployment. At any rate, the ultimate result of the union's mistake in judging the elasticity of the demand for labor will be to aggravate the tendency for collective bargaining to produce maldistribution of resources.

A special case of the general tendency of unions to underestimate the elasticity of the demand for labor is the failure of many unions to determine carefully the effect of wage differentials between union and nonunion plants upon the volume of employment in union plants.¹⁴ The differentials in terms of labor cost are usually not as large as differentials in wages because the high union wage scales tend to attract superior workmen and union employers cannot afford to retain inferior men. Because the withdrawal of capital from an industry involves cost, one must distinguish between the rate that will attract new capital and the rate that will cause the indefinite maintenance and replacement of capital already invested. Most unions have failed to determine the critical differential in labor costs beyond which capital leaves the union part of the industry.¹⁵

Some large differentials between union and nonunion plants are the result, not of union policy, but of the efforts of employers to defeat union organizing campaigns. As a general rule, however, they are a result of the fact that the bargaining power of most unions is greater than their organiza-

¹³This raises the question of whose income collective bargaining is expected to maximize—the income of the entire union (or group of unions) or only the income of the working majority of the bargaining group. The question is discussed below.

¹⁴Two situations may be distinguished in the relation of union to nonunion wage scales. One is the case where the union scale governs the nonunion scale rather completely. The other is the case, and it has been the usual one, in which the union is so remote or so weak that nonunion wages are relatively independent of union ones.

¹⁵Between 1915 and 1920, the tapestry carpet weavers in Philadelphia acquired control of that market and pushed up their wages by about 165 per cent. At the height of its prosperity in 1920, the union had about 1,800 members. It was believed that the union mills could stand a differential of 10 or 15 per cent above the nonunion, but the differential grew until it became about 50 per cent. By 1926, the union had only 800 members working in Philadelphia and more than half the union mills had ceased operating. In 1920, the union part of the bituminous coal industry produced nearly 60 per cent of the bituminous output. The union endeavored to maintain a basic wage of \$7.50 a day. Nonunion mines were paying from 30 to 50 per cent less. By 1927, the union mines were producing only 40 per cent of the output. In 1922, the hosiery workers' union controlled 90 per cent of the market. Union wages during the twenties rose to roughly double nonunion. By 1929, union control had shrunk to 30 per cent. Thanks to the NRA, the Wagner Act, and skillful organizing campaigns, the union control is now back to 70 per cent. During the last several years it has been threatened by the rapid growth of the industry in the South where wages have been about 30 per cent lower and where three-fourths of the new machines installed during the last seven or eight years have gone. The union has recently taken steps to meet southern competition by accepting wage reductions in return for an agreement by the employers to purchase up-to-date machinery.

ing power.¹⁶ Many large differentials are the result of temporary bulges in demand. The union takes advantage of the bulge to push up its rates substantially. After the demand has subsided or after production facilities have caught up with the demand, the union is reluctant to cut its rates and the drop in nonunion rates creates a dangerously large differential. Some of the differentials which proved so disastrous to unions during the twenties were the result of high rates bargained during the War which the unions were unwilling to adjust to the lower level of prices and wages that followed the drop in War demand.¹⁷ The large differentials in the hosiery industry were the result of style changes which almost overnight produced an enormous jump in the demand for full-fashioned hose. Excessive differentials may be the result of failure to adjust union piece rates to increases in productivity. If rates in nonunion plants are cut, the difference may become dangerously large. Examples of this kind of differential are found in the flint glass industry, shoe industry, and hosiery industry.¹⁸

The first remedy for excessive differentials always proposed by the unions is organization of the nonunion plants in the industry. When the plant demand schedule for labor is elastic, the differential may enable workers in nonunion plants to earn more than workers in union plants and thus may be a serious obstacle to union organization. The lamp chimney department of the flint glass workers union experienced this difficulty in acute form. The first remedy for excessive differentials which employers suggest is wage reductions in union plants. This procedure often fails because nonunion plants counter with offsetting cuts.¹⁹ There are techniques, however, particularly in piece working industries, by which union rates can be reduced without provoking counter-reductions in nonunion plants. Differences in wages do not inevitably mean differences in labor costs. A few unions have attempted to reduce the disadvantages of union plants by helping management improve efficiency. The hosiery workers have employed this method in the seamless hosiery industry, the Amalgamated Clothing Workers have used it extensively, and now the Steel Workers' Organizing Committee is using it. In fact, the Steel Workers' Organizing Committee is helping some employers reduce costs who got themselves into competitive difficulties by raising wages in an attempt to keep out the union!

Once unions achieve a given wage rate, they have a strong tendency to cling to it however much markets and technology may change. The anthracite miners have maintained their 1923 scale while the sales of an-

¹⁶ Note that excessive differentials are almost inevitable in case the union underestimates the elasticity of the demand for the labor of its members.

¹⁷ The differentials between the union and nonunion parts of the bituminous coal industry are an example.

¹⁸ In the hosiery industry most of the rates which had been rendered out of line by changes in conditions have been eliminated.

¹⁹ The nonunion employer may use the fact that the union workers had consented to a cut as a reason why the nonunion workers must accept a corresponding cut.

thracite have dropped almost in half. The railroad unions have actually raised wage scales while railroad traffic was falling in half. Perhaps these unions were pursuing a sensible marketing policy from the standpoint of their members. Their officers might argue in each instance that the price of the product and *pro tanto* the price of labor had little to do with the decline of sales. These extreme cases of price rigidity in the face of violent market changes, however, raise two principal questions: (1) are the union members being guided by future as well as present considerations—in other words are they underestimating the long-run elasticity in the demand for labor; and (2) whose income is the union intended to maximize—the income of all members regarded as an entity or simply the incomes of a majority. Many cases of rigid wages simply reflect the fact that union members do not know that their long-run interests conflict with their short-run. Hence they do not attempt to determine whether wage cuts today might substantially retard the decline in employment. Of particular interest is the question of whose income the union is trying to maximize—the income of all the members or only the income of a majority. If the union is attempting to maximize the income of all its members, then wage reductions in the face of technological and market changes would often be indicated because men with specialized skill will earn more at reduced rates at their customary occupations than in new jobs. If, on the other hand, unions simply undertake to maximize the income of a controlling majority of their members, they become organizations by which some workers exploit other workers.

IV

Most momentous of all is the question of the effect of collective bargaining upon the demand for investment funds. I shall discuss this question under the heads of the effect of collective bargaining upon (1) technological change; (2) the propensity to consume; (3) the relations between costs and selling prices; (4) the relation between the prices of capital goods and other goods; and (5) the adjustment of the price of labor to cyclical changes in business. The discussion will necessarily be suggestive rather than exhaustive.

The great pressure which collective bargaining puts on wages will tend to accelerate technological change so long as collective bargaining does not extend to research workers and does not, therefore, tend to raise the cost of discovery. It is reasonable also to assume that pressure for higher wages will encourage laborsaving rather than capital saving inventions and thus will facilitate the absorption of savings by industry.²⁰ About 57 per cent

²⁰ Observe, however, that several special influences, such as the rapid rate of technological change itself and certain changes in markets (particularly the rise of large buyers who may switch large orders from one producer to another), are encouraging capital saving inventions. The possibility of losing the account of a mail order house or automobile company in a year or two compels producers to show a lively interest in ways of keeping down the capital required to produce a given article.

of the employment and half of the pay rolls in American industry outside of railroads and agriculture are in approximately 1,700,000 concerns employing less than 400 workers. Nearly all of these enterprises are too small to perform their own research, and outside facilities for giving them research service are far from adequate. Since the pressure which collective bargaining is bound to create for higher wages makes industrial research more imperative than ever, perhaps the state universities can make research available to the small concerns by offering it at cost.

Efforts to raise the propensity to consume by increasing the price of labor and encroaching upon profits seem to reduce the propensity to invest even more than the propensity to save. This is inevitable because otherwise the previous situation would not have been one of equilibrium. The best opportunity to raise the propensity to consume in such a manner as to increase the propensity to invest is by keeping the prices of personal services and of durable consumers goods relatively low.²¹ The demand for these goods seems to be elastic and they are purchased in large measure with funds that would otherwise be saved. About 30 per cent of the saving in the community is done by persons with incomes of less than \$10,000 a year and nearly half by persons with incomes of less than \$25,000 a year.²² It is impossible to predict whether collective bargaining will be conducted so as to keep the prices of personal services and of durable consumers goods relatively low. In an economy in which collective bargaining was quite prevalent, wages might be expected to vary with the bargaining power of the several groups of employers and the several groups of wage earners. Bargaining power may be defined as the cost to one party of imposing a loss on the other. Cost to the group of wage earners would include to a rather indefinite extent

²¹ Mr. Keynes seems to think about reducing the propensity to consume simply in terms of taxing the very rich (*The General Theory of Employment, Interest, and Money*, pp. 372-74). He does not visualize the important competition between durable consumers goods and savings. Unless the taxes on very large incomes are very carefully devised, they have repercussions which Mr. Keynes has overlooked. Investment opportunities are created by pioneering—by men who put funds into new products and new processes and demonstrate their profitability. This actual demonstration that new products can be made at a profit or new processes are practical is necessary to attract more timid capital. Hence, the pioneering type of investment may be regarded as opening up investment opportunities. It is obviously of particular importance to encourage rather than discourage the pioneering type of investment. The persons who are best able to undertake the riskiest type of investment are the persons with very large incomes and it is from such incomes in the past that a large part of pioneering investment funds have come. Very heavy taxes, however, on high incomes are likely to cause the very persons who are best able to take risks to shift from risky to safe ventures. Thus the heavy taxes which Mr. Keynes advocates are likely to reduce, not merely the volume of savings, but, even more, the opportunities to invest. The oversight is a natural one for Mr. Keynes to make because his entire analysis is worked out in a framework that visualizes static technology—a convenient simplification, but, after all, a shocking limitation in a work that purports to offer a general theory of employment. When very high tax rates are imposed on incomes in the higher brackets, a differential should be made between income from interest and income from dividends with substantially lower tax rates upon income from dividends. Furthermore, pioneering capital should be encouraged by liberal loss carry-over provisions in the income tax law. A new venture is likely to be in the "red" for from two to five years after its beginning.

²² See the estimates of M. Ezekiel, *Review of Economic Statistics*, Nov., 1937, pp. 178-91.

the unemployment that might follow an increase in wages. Hence when the product is elastic in demand (as in the case of durable consumers goods), the union might be restrained by the fear of unemployment from pushing up the price of labor very far. As I have indicated above, however, two difficulties stand in the way of accepting this conclusion. One is that trade unions seem to underestimate the elasticity of the demand for the services of their members—just as most employers under conditions of monopolistic competition put the price of their products too high. A second is that the majority of the union may not care whether a minority is unemployed, provided the minority is not dangerously large.

Will collective bargaining raise operating costs so high as to restrict the utilization of present equipment and to narrow the outlook for profits and restrict the demand for investment funds? So long as collective bargaining is far from covering all of industry and is growing slowly, union wage policy may open up large and attractive investment opportunities in the nonunion parts of industry. At the cost of considerable duplication of plant, therefore, collective bargaining may substantially increase investment and employment. Let us assume, however, that collective bargaining becomes so prevalent that union wage policy determines the general wage level. The productivity of a large proportion of the working population of the United States is substantially less than the present union wage scales in the several occupations. Indeed, precisely here we have a large part of the explanation of the somewhat surprising success of union plants in holding their own against nonunion plants—union plants, as pointed out above, can attract superior workmen and cannot afford to keep inferior men. Hence, unions tend to become devices by which superior workers enforce differentials for their efficiency.²³ Because of this very condition, however, an attempt to apply present union wage scales to a very large proportion of industry would have disastrous results.²⁴

Mr. Keynes and his followers would disagree with this statement. They argue that MV may be depended upon to translate changes in the price of labor into changes in the prices of finished goods and to keep the volume of output unchanged subject only to the effect of changes in MV upon the rate of interest. I have tried without success to persuade myself to accept this comfortable conclusion. Suppose that there is a general increase in the price of labor. There is no reason to expect an instantaneous change in MV

²³ As a matter of fact, if the evidence of existing wage scales and profit statements mean anything, a surprisingly large proportion of the workers do not produce as much as fifty cents worth of goods per hour. This, of course, is not necessarily the fault of the employees. It represents in part the scarcity of managerial ability and in part the fact that the amount of capital per worker in American industry is still quite small—not much above \$4,000 per worker in industry as a whole. The fact, nevertheless, remains that a very large part of the workers have a productivity of less than fifty cents an hour and many of them a productivity of considerably less.

²⁴ The case of piece work scales is somewhat different, provided these scales do not include a time rate guarantee.

sufficient to translate the higher price of labor into correspondingly higher prices of finished goods, because businessmen feel higher costs before they experience a higher demand for goods. Hence it is reasonable to expect businessmen to curtail production pending at least a test of the higher prices made necessary by higher costs.²⁵ The Keynesians may argue, however, that an ultimate increase in MV will occur because at any volume of output less than the original one, the community will attempt to invest more than it saves. If this were not so, the original position would not be one of equilibrium. It is true that if businessmen curtail production in response to the increase in the price of labor, incomes and, hence, the propensity to save would be reduced. But it does not follow (as the Keynesians assume) that investment opportunities would be reduced less than the propensity to save. Investment opportunities are partly determined by physical volume of production and this has been reduced. They are also determined by the relationship between cost schedules and income. Cost schedules have been raised, but incomes have been little changed.²⁶ Hence it is quite possible that investment opportunities may be reduced even more than the propensity to save and that still further contraction of production is necessary before equilibrium is reached. This is not inconsistent with the fact that the economy may have been in equilibrium before a general increase in wages occurred, because that equilibrium was predicated upon the (then) existing cost schedules, and labor cost schedules were raised by the general increase in the price of labor.

More important than these logical difficulties is the appeal to experience, because, after all, in discussing MV , we are dealing not merely with a quantity in an equation but with the behavior of human beings. Between 1929 and 1937, wage rates in the United States increased about 21 per cent in manufacturing and about 10 or 15 per cent in other branches of industry. In the same period the price level of finished goods dropped 10 per cent. The real change in the price of labor is uncertain because the change in labor efficiency is not known. That it was not sufficient to offset the changes in wages and prices is indicated by the state of profits. Even as late as 1936 scarcely two out of five of the 478,000 active corporations in the United States made any money. Indeed, corporate profits in 1936 were

²⁵ The businessman is not acting irrationally when he adopts a "wait-and-see" attitude because he knows that consumer resistance to higher prices even in the face of rising consumer incomes is a reality. Witness the experience of the United States in the latter part of 1936 and the early part of 1937. Between May, 1936, and April, 1937, the cost of living rose about 5.4 per cent, and nonagricultural labor income rose about 15 per cent. Despite the fact that labor incomes were outrunning the increase in prices, definite consumer resistance to the higher prices developed about the end of 1936. The New York Federal Reserve Bank's index of physical distribution to consumers reached its peak in December, 1936, and January, 1937. Thereafter, the index dropped. The event proved that any businessmen who may have accepted the Keynesian assumption that higher expenses are equivalent to a proportionate increase in demand were wrong.

²⁶ They may be slightly increased or even slightly decreased because a smaller volume of production is occurring at a higher price level.

substantially less than in 1924, a year of mild depression when the index of industrial production was 10 per cent below 1936. They were even lower than in 1922, another year of depression when the index of industrial production was 20 per cent below 1936.

Will collective bargaining seriously narrow the opportunities for investment by raising the prices of investment goods and thus reducing the marginal efficiency of capital? The danger of this does not appear serious in the case of industrial equipment. The demand for this seems to depend upon the businessman's judgment of the total business situation. Changes in his expectations cause violent shifts in his demand curve for capital goods but the curve at all times is pretty inelastic. Quite different, however, appears to be the case of residential building. There is a certain minimum demand for housing that is little affected by the prices of housing. After this minimum, the demand becomes increasingly sensitive to prices, and it is, of course, the elasticity of demand at the margin which counts. The building trades unions have seriously misjudged their market and are pursuing a price policy that is not only injuring their members but is substantially reducing the ability of private industry to absorb the savings of the community. Residential building is now at half the level of the twenties. The prices of building materials are 11 per cent below the levels of 1926, but union wage scales in the industry are nearly 5 per cent above 1926, the peak of the boom. In the face of this situation, union wage agreements in the building trades were raised 6 per cent in 1937, the largest annual increase since 1923. High labor costs have been only one of several obstacles to building, but the very existence of other obstacles is a reason why there should not be added to them the burden of a wage scale substantially above boom levels.²⁷ In 1937, residential building costs (according to the Boeckh index) were practically the same as in 1926. The prices of many durable goods, such as automobiles, refrigerators, and radios, were from 25 to 50 per cent below 1926. As a result, in 1926 the housing industry got about one out of every three dollars spent by consumers for durable goods, and in 1937, only one out of every seven dollars. Most important of all, however, the community was deprived of a major outlet for its savings.

Highly controversial is the question of the cyclical wage movements which will best maintain investment and employment. All economists probably would agree, however, that business stability is not promoted by a continued rise in wages after business has turned down. In the past, negotiators on both sides have often failed to take account promptly of the cyclical

²⁷ In the spring of 1937 the increases in union wage scales seem to have affected the wages actually paid residential building even though the union scale was often not paid. At the present time most of the building trades unions in most cities have priced themselves out of the private residential building market. In small housing operations, it is difficult for the employer-employee system to compete with the working contractor system.

movements of business. In 1930 union scales in the building industry rose 4.2 per cent above 1929. There was even a slight increase in building wages during 1931 over 1930! The experience in earlier depressions was similar. In 1908, for example, union wage scales in the building industry rose nearly 6 per cent above 1907. Union scales in book and job printing rose 12 per cent between 1920 and 1921. In the last depression they continued to rise until 1932, when they were 3.3 per cent above 1929. Union wage scales in general continued to rise well after the downturns of both 1920 and 1929. By June, 1937, the movement of raw material prices, demand deposits, and bond prices all indicated that a recession in business was at least probable. Wages, both union and nonunion, continued to rise throughout the summer and even well into the fall.

As a general rule, it may be assumed that unions discourage wage cuts in time of depression. The question of whether wage cuts aggravate or mitigate the severity of depressions breaks up into more parts than economists have been accustomed to assume.²⁸ At certain points where the demand for labor is instantaneously elastic, wage reductions are needed in times of depression in order to increase labor income and raise the propensity to consume. I have pointed out above that most forms of durable consumers goods seem to be elastic in demand and so also are many of the services which consumers are buying in rapidly growing quantities.²⁹ Expenditures for both durable consumers goods and services are, of course, competitive with savings. Here is a broad field, therefore, in which there is an opportunity to encroach upon savings and stabilize consumers' expenditures by making reductions in prices. Wage cuts to facilitate such price reductions would raise the propensity to consume and thus mitigate the severity of the depression. The case in favor of wage cuts may be broader than I have just indicated. Once a depression gets well started, the mere drop in incomes leads consumers to expect lower prices and to postpone buying until prices reach what the public regards as a proper level.³⁰ Under these circumstances, general cuts in wages may raise the propensity to consume.

When wage reductions are being made more or less simultaneously in a large number of plants, there is danger that they will produce a reaction

²⁸ To the makers of trade union policy the question of whether wage cuts aggravate or mitigate the severity of depressions may be of only academic interest. Only by accepting substantial wage cuts during the Great Depression was the Amalgamated Clothing Workers able to keep its employers in business and to obtain moderate employment for its members. Had the hosiery workers not accepted a 40 per cent wage cut in the fall of 1931, it is doubtful whether enough of the union would have survived to make the remarkable comeback that it achieved several years later.

²⁹ The expenditures of consumers on durable goods regularly run somewhat higher than the expenditures of all forms of industry on capital goods. Consumers' purchases of services are even larger. Expenditures on durable consumers goods and services together amount to more than 40 per cent of the total outlay by consumers.

³⁰ Note in this connection that inventory liquidation under pressure from maturing bank loans may have driven prices below reproduction costs but the public may strongly resist paying a higher price.

somewhat different from isolated cuts—that they will arouse an expectation of still further cuts and thus induce postponement of commitments. The effect of wage cuts upon the postponement of commitments depends upon how the cuts are made. Certainly there is more danger of a general postponement of commitments when sweeping cuts are announced by large corporations. Over two-thirds of the employment in American business, exclusive of railroading and agriculture, is in small concerns with less than 1,000 employees and more than half of it in concerns with less than 400 employees. Most of these enterprises can make cuts without producing general market effects. The timing of wage cuts is important. In seasonal industries it is possible to avoid a postponement of commitments by timing cuts to correspond with the seasonal upturns. Particularly important is the avoidance of general and sweeping wage changes. The system of payment by the piece lends itself to gradual but steady rate adjustments. Piece prices which are out of line may be changed and new lines and new operations may be priced on a somewhat lower level than the old, all with the result of appreciable reductions in labor costs without definite or sweeping decreases in rates. Finally, collective bargaining itself offers a way of making wages reductions without arousing expectations of an uncontrolled downward spiral.

Up to the present, there has been relatively little experimentation under collective bargaining with techniques for facilitating the adjustment of wages to changing conditions. Scattered efforts have been made to link wages to the cost of living or to the price of a commodity but none of these schemes, however satisfactory under the particular conditions of their operation, promises general usefulness. In 1921 a profit-sharing scheme was embodied in the collective agreement in the British bituminous coal industry. Though hailed by unions and employers alike as an epoch making achievement, one of its principal effects has been to breed friction as to the dividing line between profits and expenses. The growth of collective bargaining, however, is bound to compel the development of devices for introducing some element of contingency into wages and relating them to the ability of employers to pay. This might be achieved by making most wage changes take the form of temporary advances to or deductions from base rates. The addition or deduction would have a termination date before which continuation of the addition or deduction would be subject to negotiation. This procedure was followed in 1932 when temporary reductions were negotiated from base rates in the railroad industry. Certainly there is no reason in non-declining industries why the temporary necessity for lower labor costs should lead to changes in the base rates themselves. And since the average annual increase in per capita productivity is about 2 per cent, there is no reason why a temporary improvement in business should produce more than very small increases in base rates. Certainly there was no economic justification for permitting the temporary improvement in

1936 and 1937 to produce permanent increases of 10 to 15 per cent in the price of labor in many industries—increases which seem to have intensified the depression and impeded recovery.

V

What is the use of discussing the effect of collective bargaining upon the volume of employment? Are unions politically capable of considering the effect of their policies upon employment? Since they are democratic organizations, are they not bound to be devices by which the majority advances its interests quite regardless of the effect upon the minority and, above all, quite regardless of the effect upon the general economic situation?

I venture the opinion that considerable practical good may come of the exploration of the relationship of union policies to employment. In the first place, the fact that a given policy causes a minority to suffer does not necessarily mean that a majority is benefiting. The policy may reflect, not the exploitation of a minority by a majority, but simply the failure of the union leaders to formulate wise policies. Consider, for example, the efforts of some unions to protect their members against technological change by pursuing a policy of restriction rather than adjustment. When protection takes the form of permanent make-work rules, the ability of union employers to hold their own in competition with nonunion employers is impaired and a minority of the union members are thrown out of work without a corresponding gain to the majority. Indeed in the long run the majority itself is better protected by a policy of adjustment than by a policy of restriction. In the second place, whether the union is divided between a majority that is indifferent to the effects of union policies upon employment and a minority that bears the burden of unemployment depends upon how unemployment is distributed among the members. If it is concentrated by seniority rule among the junior members, the union may have little interest in employment problems. This goes far to explain the marketing policies of the railroad brotherhoods. On the other hand, if unemployment is spread thin among all members by limited equal-division-of-work, the union may be politically capable of interest in even a moderate degree of unemployment. In the third place, when the union members are keenly aware of their long-run as well as their short-run interests, the conflict between a majority not interested in unemployment and an exploited minority tends to disappear because in the long run the majority must consider the effect of union policies upon employment.

All in all one finds about the same differences in the marketing policies of trade unions as one does among corporations. At one extreme one finds the men's clothing workers and the hosiery workers with their sensitiveness to changes in markets and their willingness to adjust the price of labor to changes in demand. At the other extreme one finds the building trades and

the railroad brotherhoods with little disposition to adjust the price of labor to conditions in the market—in fact with a tendency to buck the market and to put up the price of labor quite irrespective of demand. No one would assert that the first two unions do a poorer job of representing their members than the second group. In fact, most persons would probably agree that they do a better job. The difference simply is that the marketing policies of the first are more realistic and that in consequence they do a better job of selling labor. As trade unions gain more experience in selling labor, I venture the prediction that the successful marketing policies of the men's clothing workers and the hosiery workers will receive wider acceptance.

My discussion of our changing industrial relations has related solely to economic issues. In concluding, let me remind you that far more than economic issues are at stake. It is frequently said that political democracy cannot exist without industrial democracy. There is truth in the statement. It also is true that industrial democracy, if unwisely operated, may threaten the existence of political democracy. The basis for free institutions is economic opportunity, because it is opportunity that keeps social conflict mild, and only when social conflict is mild are men willing to settle their differences by voting, by negotiating, or by arbitrating rather than by fighting. The basis for opportunity is expansion. In the happy days of the nineteenth century one could rely upon the rapid expansion of industry to correct the mistakes of policy. Now we must rely upon wisdom in policy to encourage expansion. Whether the spread of collective bargaining helps or hinders the preservation of democratic institutions, will depend fundamentally upon whether it is so conducted as to encourage the expansion of industry.

THE EFFECT OF WAGE INCREASES UPON EMPLOYMENT¹

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I

Before examining the effects of a general change in wages upon investment, it is perhaps proper to consider very briefly the consequences which follow from such a change in specific sets of industries. It is of course generally true that an increase in wages in a given industry will tend to increase the amount of machinery and capital which is mixed with labor in each unit of the given product. This is because businessmen presumably carry their investment in a given enterprise to the point where the last unit of money invested in capital goods gives a yield equal to that of the last unit of money invested in labor. If the cost of the marginal units of labor be raised in a given industry, there will be some substitution of capital for labor within each unit of product. The precise degree of this will depend upon the relative elasticity of substitution of capital for labor. To this degree, therefore, an increase in wages will create an increased demand for capital and investment.

But it should be noticed that any such increase in wages will tend, if other things remain equal, to raise the prices of the products in question relative to others and hence decrease the number of units of these products which are demanded. This will be true in all industries for since the substitution of capital for labor has taken place because of a rise in the curve of marginal labor costs, the result is a higher average total unit cost curve than before and hence a higher immediate and ultimate price. This will decrease the number of units demanded and produced.

Where the increase in wages has been confined to the capital goods industries, we have a special instance of this latter tendency. In these industries, investment will be carried to the point where the cost of the last unit of labor applied to the production of a given capital good will be equal to the expected income ultimately to be derived from the product of this unit of labor discounted by the interest rate. If other variables, such as the anticipated future yields and the rate of interest were to remain constant, it would follow that an increase of wages in the capital goods industries would make the marginal labor costs in this field greater than their discounted future yields and hence would decrease the number of such units produced. In the field of consumers goods, the relative effect upon net investment would hinge upon the relative magnitude of (a) the elasticity

¹ I am greatly indebted to my associate, Miss Grace Gunn, for invaluable assistance in the preparation of this paper, particularly in its mathematical aspects. I have also profited from the criticisms and suggestion of Messrs. A. P. Lerner and H. Gregg Lewis. Messrs. H. Gregg Lewis, Y. K. Wong, and Jerome Moberg have drawn the charts.

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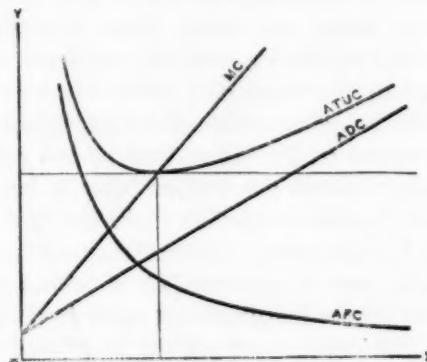
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of substitution of capital for labor within each unit of product, on the one hand, and (b) on the other, the relative decrease in the number of units produced resulting from the relative increase in price per unit and the coefficient of elasticity of demand for the product.

II

But all this has been based upon the assumption that the wage changes either occurred in only one industry or in one part of the economy. It is, of course, precisely in this fashion that many such changes do occur. But what would be the effect upon investment if there were a general increase in wages over the economy as a whole which applied to the capital goods industries as well as to those producing consumers goods? Would such a

CHART I
(After Viner)



uniform increase raise the price of capital goods equally with the price of labor, so that there would be no advantage in substituting the former for the latter, and so that the relative distribution of the national income between investment and consumption would continue as before? It was the great merit of an American economist, Professor H. G. Hayes, to raise this issue nearly fifteen years before the publication of Mr. Keynes's iconoclastic *General Theory*,² when, it will be remembered, his analysis was that the price of machinery would rise or fall in an equal proportion to the movement of wages. As will shortly be seen, this issue is extremely complicated and it is perhaps best to approach it with an initial set of simplified assumptions which should be clearly stated and then explicitly modified in the later discussion. We shall begin with the assumption that competition is perfect and that the supply of bank credit as well as the rate of interest is constant.

² H. G. Hayes, "The Rate of Wages and the Use of Machinery," *American Economic Review*, Vol. XIII (1923), pp. 461-65.

The demand curve for the individual enterprise under these conditions is described by a horizontal line of infinite elasticity and of no flexibility, and we shall also assume that additional units or hours of labor are supplied under conditions of a constant supply price. As my colleague, Professor Viner, has shown in a classic article,⁸ an individual firm is in short-run equilibrium under these circumstances when the marginal cost is equal to price, and the individual firm is in long-run equilibrium when in addition the average total unit cost is equal to both. This will be at the minimum value on the average total unit cost curve, which will also be the point of optimum output.

We shall treat the average direct cost curve as being virtually synonymous with the curve of average wage cost per unit of output, and we shall tentatively assume this to be described by a straight line arithmetic function of the type of $y = b + mx$. The marginal cost function under these conditions will be $y = b + 2mx$; namely, its slope will be twice as great as that of the average direct cost curve. Here b represents the level of hourly wage rates and m , the slope of the reciprocal of the average productivity multiplied by the wage rate, while $2m$ represents the slope of the reciprocal of the marginal productivity multiplied by the wage. The value of m will, therefore, be determined by the proportionate rate of change in the average output per unit of labor as more units are added, and for the sake of simplicity we shall make the further assumption that this average output is a decreasing value and that m consequently is positive.

Now let us assume that an increase (k) of 10 per cent in hourly wage rates occurs. This raises the marginal cost curve in the same proportion as the average direct cost curve, since each is multiplied by the same factor of k . Thus, if the average direct cost of producing n units is 12 cents, and the marginal cost of the n th unit is 16 cents, then an increase in the average cost by 10 per cent to 13.2 cents will cause an increase in the labor cost of the marginal unit of 1.6 cents, or 10 per cent.⁹

This increase of 10 per cent in marginal cost will apply equally to all industries, and to those in the field of capital as well as of consumers goods. The question then arises as to whether these equal increases in marginal cost will have an equal proportionate effect on the prices of each set of goods.

⁸ Jacob Viner, "Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie*, Band III (1931), pp. 23-46.

⁹ The arithmetic proof for this is simple. If the origin (b) of both the marginal and average labor cost curves is 8 cents, and for n units of output the average cost is 12 cents, or an increase of 4 cents, the marginal cost of the n th unit will be 16 cents. This is because the marginal curve under straight line conditions rises twice as rapidly as the average curve. If wages increase by 10 per cent, then, other things being equal, the origin of the average curve will be at 8.8 cents; and the average cost of n units will be 13.2 cents. The increase in the average cost curve over this output will, therefore, be 4.4 cents; and the consequent increase in the marginal costs of the n th as compared with the original unit will be twice this, or 8.8 cents. This will make the marginal cost of the last unit 17.6 cents (i.e., 8.8 + 8.8), which would be precisely 10 per cent more than the prior marginal cost of 16 cents.

This can be considered in terms of four differing time periods in each of which we are abstracting from growth factors such as increasing population, production, investment, and inventions: (1) the immediate impact, where the equilibrium will be at the point of intersection of the new marginal cost curve and the original horizontal demand curve for the establishment; (2) the short-run equilibrium, during which the existing capital structure is not altered and where equilibrium will be at the point of intersection between the new marginal cost curve and the new horizontal demand curve for the establishment; (3) a longer-run equilibrium where the quantity of capital in the industry will shrink to the amount needed to produce the smaller output, through the unreplaced depreciation of original physical capital, and where equilibrium will be at the point of tangency of the attendant demand curve for the individual enterprises and also be equal both to marginal cost and the minimum points on the average total unit cost curve; (4) a more final equilibrium, where replacements of the original physical capital will begin and continue, but where the general conditions of equilibrium will be those which have just been stated.

(1) As regards the immediate impact, the shifting upward of the marginal cost curve will cause an intersection with the original horizontal demand (price) curve for the individual enterprise at a point to the left of the original point of intersection, and hence will lead to a decrease in the output in each industry. But if the marginal cost functions of the two sets of industries are different, the proportional degree of this reduction will also differ. In general, two rules can be laid down:

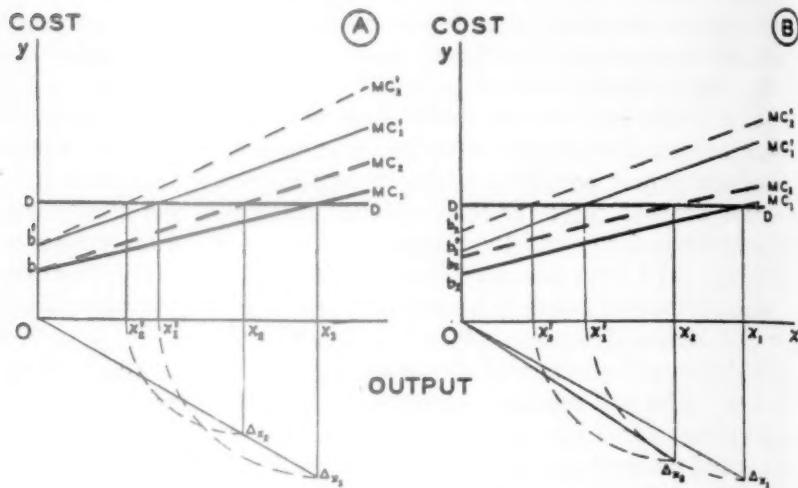
(a) The higher the b value or the level of hourly wage rates relative to the price, m being equal, the greater the proportionate reduction in output. For while the increase of k in the b values will produce the same absolute decrease, the relative decrease in output at the point of intersection will be the greater the higher is the b term in relation to price. A graphic solution of this point is given in Chart IIA and the mathematical solution is given in the Mathematical Appendix, Note 1.⁵ In Chart IIA, the slope values or the m 's are the same but the b values are different. A word of clarification is perhaps in order. It is not the absolute height of the hourly wage rate, or the b term, which is vital. If this were all, then since hourly wage rates in the capital goods industries are from at least 20 to 25 per cent higher than in the consumers goods industries,⁶ their b 's would be correspondingly

⁵ Not published but available upon request to author. [Editor.]

⁶ According to *The Monthly Labor Review* for November, 1938 (p. 1165), the average hourly earnings in manufacturing industries producing durable goods were 70.2 cents, while in manufacturing industries producing non-durable goods, the average was 57.8 cents, or approximately 18 per cent less. Rubber products and chemicals, with averages of 76.0 and 76.3 cents an hour, were included in the latter group. If these were deducted the average hourly earnings in the consumers goods industries would have been somewhat reduced and the difference made somewhat greater. In the industries outside of manufacturing, there seems also to be a tendency for hourly rates to be higher in the field of capital goods.

higher; and consequently an increase of k would, other things being equal, effect a greater immediate reduction in the output of capital goods. But what is essential is the value of b relative to the price of the product. It can be demonstrated⁷ that the relative share of the total product received

CHART II



Subscripts 1 and 2 distinguish enterprises *A* and *B*. The unprimed notation indicates the original cost curves, the primed notation the new curves after a wage increase.

X_1X_1' represents the decrease in output for individual enterprise *A*

X_2X_2' represents the decrease in output for individual enterprise *B*

$X_1X_1' = X_1\Delta_{x_1}$ by construction

$X_2X_2' = X_2\Delta_{x_2}$ by construction

$$\frac{X_1X_1'}{OX_1} = \frac{X_1\Delta_{x_1}}{OX_1}$$
 represents the relative decrease in output for *A*

$$\frac{X_2X_2'}{OX_2} = \frac{X_2\Delta_{x_2}}{OX_2}$$
 represents the relative decrease in output for *B*

$$\frac{X_1\Delta_{x_1}}{OX_1} = \text{tangent of angle } X_1O\Delta_{x_1}$$

$$\frac{X_2\Delta_{x_2}}{OX_2} = \text{tangent of angle } X_2O\Delta_{x_2}$$

CHART II A. b 's equal

angle $X_1O\Delta_{x_1}$ = angle $X_2O\Delta_{x_2}$

$$\therefore \frac{X_1\Delta_{x_1}}{OX_1} = \frac{X_2\Delta_{x_2}}{OX_2}$$

CHART II B. $b_2 > b_1$

angle $X_2O\Delta_{x_2} > X_1O\Delta_{x_1}$

$$\therefore \frac{X_2\Delta_{x_2}}{OX_2} > \frac{X_1\Delta_{x_1}}{OX_1}$$

Thus, the average for building construction was 90.3 cents, while the average for retail trade was 54.5 cents, for hotels 30.7 cents, for laundries 41.1 cents, and cleaning and dyeing 46.8 (*ibid.*, p. 1169). For domestic and farm labor, the average for the country is probably below 40 cents an hour.

⁷ Mathematical Appendix, Note 2. [Not published. See footnote 5, Editor.]

by labor (assuming straight line functions for marginal labor productivity and marginal cost) depends directly on this relative b . For the average of the three census years of 1935, 1929, and 1927, which taken as an entirety would perhaps not be far from equilibrium, the average share of labor in the iron and steel, nonferrous metals, and machinery industries of the net values added by manufacturing was 41.3 per cent; while it was but 38.5 per cent in the four consumers goods industries of food, textiles and clothing, paper, and leather.⁸ It would seem, therefore, that for manufacturing (contrary to general belief) the b value is not far from 7 per cent greater in the capital goods industries than those manufacturing consumers goods, although this situation would be greatly modified if retail trade and services were taken into account.⁹ Indeed, it might be safer to assume that any differences between the b 's in these two sets of industries will probably not be significant, although there will be appreciable variation as between specific industries where the final labor content is low, and where it is high.

(b) Interestingly enough, while the values of m and $2m$, or the slopes of the average direct cost and marginal cost functions, do affect the absolute amounts of the immediate decrease in output, they do not affect the relative decreases and hence can for the moment be disregarded. This is shown graphically in Chart IIB and demonstrated in the Mathematical Appendix, Note 1 (see footnote 5). In Chart IIB we have b values which are equal, but the m 's, or the slope values, are not.

Any difference in the immediate relative effect of wage increases or decreases upon output would, therefore, depend on the relative value of b in terms of price. While this might lead to a slightly greater immediate contraction of output within manufacturing in the capital goods industries, it is not at all clear that this would be the case in the economy as a whole.

(2) We should not ignore the fact that the demand curves for the individual enterprises in each industry will shift upwards. This will be caused by the fact that, as we have seen, the immediate quantities produced in all enterprises will be less, and these reductions will cause prices to increase. This is a consequence both of the negative money demand curves for virtually all products¹⁰ and of the fixed quantity of money, or rather MV , which we have assumed.¹¹ The new prices will constitute new horizontal

⁸ In these three years the amounts of value added in the three groups of capital goods industries were approximately 22.4 billions of dollars, of which about 8.5 billions were paid out in wages. In the four groups of consumers goods industries, the amounts added were approximately 23.8 billions, of which 9.2 billions were paid out in wages.

⁹ The share of labor of the value of building construction is, of course, very high, and this would raise the b term for the capital goods industry. But while there are some service trades such as moving picture theaters, where the ratio of labor costs to receipts is low, the general tendency is the other way; and hence probably modifies any conclusion based on manufacturing alone.

¹⁰ There are, of course, some commodities such as margarine which, from the standpoint of income elasticities, have more units demanded as real income diminishes.

¹¹ I.e., since $P = \frac{MV}{T}$, a decrease in T with MV constant, as is assumed, will cause P to increase.

demand curves for the individual enterprises. As we have seen, these relative increases in price and upward shifting of the horizontal demand curves will vary from industry to industry. The possibly higher relative b values in the capital goods industries will be a force tending to increase prices there more than elsewhere, although as we have seen these should perhaps be disregarded, but differences in elasticities of demand will also cause differences in the relative upward shifting of the curve. It would be only a pure coincidence if the new demand curves were to be immediately tangent to the minimum points on the average total unit cost curves, and this possibility would only occur immediately in an infinitesimal fraction of the cases. As long as the existing capital structure remained fixed, the points of equilibrium would be at the respective points of intersection of the new marginal cost curves and the new horizontal demand curves. In some cases where the demand was relatively inelastic and the b value relatively high, this point of equilibrium might theoretically be at an output greater than was originally the case. But in the vast majority of cases, it would be at smaller outputs than originally. This would be necessitated by the fact that with prices higher than before, but the supply of bank credit or, more accurately, MV remaining the same, the general index of production would have to fall.

Certain conclusions would follow from such a set of circumstances. There is at present no definite means of determining whether or not the capital goods industries would contract less than the others, although the abstract mathematical conditions for a solution would not be too difficult to work out. The immediate returns to the capitalists, including under this term both investors and enterprisers, would be the difference between the price per unit and the average direct cost per unit multiplied by the number of units. This would be, in Marshall's terms, a quasi-rent and would not be dependent on the cash value of the original investment. It is theoretically conceivable that in a few industries it might yield even greater returns than before and encourage new investments in these lines. As new firms entered these industries because of these relatively high quasi-rents, output would expand and the price level would fall. This would mean that the horizontal demand curves in these industries would move downward. But in the vast majority of industries, there would be for a time, at least, surplus and unused capital which would discourage fresh investment. For the capital structure was formerly adapted to produce ox units at minimum cost, but now will in general be producing less than this amount. Under these conditions, the amount of the quasi-rent will be insufficient to pay the rate of interest (if this remains constant) upon the previous fixed capital. This will not only discourage fresh investment, but it will also lead businessmen not fully to replace depreciated and wornout capital. The capital structure will, therefore, shrink by the disappearance of certain firms, and with this,

output will also decline still further. This will cause the price level, and hence the horizontal demand curves, to rise.

It is obvious, therefore, that with some possible demand curves moving downwards and others moving upwards, the industries will be moving towards a new equilibrium.

(3) This will be a longer-run equilibrium where the quantities of capital will as a whole be reduced because of the decline in output, and in which industry will allow the wastes of depreciation to fall upon the unused equipment, and which under our assumptions will operate in forcing certain firms out of business in most industries. Total outputs will, therefore, tend to be so regulated that the attendant horizontal demand curves will ultimately be tangent to the new average total unit cost curves at their minimum points, where they will also be equal to marginal cost. For the sake of simplicity, we shall assume that in general the original fixed cost curves have not been altered,¹² and that the average direct and the marginal cost curves are those created by the increase (k) in wages.

These minimum points (still assuming that bank credit does not expand) will be to the left of the former points of equilibrium, and hence there will generally be decreased output and employment in comparison with the original situation. This is shown graphically in Chart III and is also demonstrated in Note 3 of the Mathematical Appendix (see footnote 5). The general price level will rise in the same proportion as the index of production falls, but the prices of some sets of goods will rise by more than others. Thus, where the total quantities of capital per establishment, and hence fixed charges, or c , are greater but direct costs, or $b + mx$, are the same, the less will be the proportionate increase in the new point of minimum unit cost over the original minimum cost. This is shown graphically in Chart IIIA where only the c values differ. The mathematical proof for this is given in Note 4 of the Mathematical Appendix (see footnote 5).

Since the amount of capital per establishment in 1919 was approximately 2.3 times as great in the capital goods industries as in the consumers goods industries,¹³ it follows, therefore, that so far as this important factor is concerned, the prices of capital goods during this period will tend to increase by proportionately less than the prices of consumers goods. There will, therefore, be some substitution of the former for the latter, and more units of capital will be mixed in each unit of product than before.

¹² To the degree that there has been a wasting away of unreplaced capital within the firms, the c values will be reduced. But unless the rate of depreciation differs appreciably as between the capital and the consumers goods industries, this would not seem to invalidate the conclusions which follow about the relative changes in the minimum points.

¹³ In 1919 the 54,307 establishments in industries producing iron and steel and their products, nonferrous metals, transportation equipment, and railroad repair, had a total capital of 13,709 millions of dollars, or an average of \$252,000. The 132,664 establishments in industries producing foods, textiles and clothing, paper and printing, and leather goods, had a total capital of 14,616 millions of dollars, or an average of \$110,000 per establishment. (*Census of Manufactures, 1919*.)

IN CHARTS IIIA, B, and C WHICH FOLLOW

P_1P_1' represents the increase in price for individual enterprise *A*

P_2P_2' represents the increase in price for individual enterprise *B*

$P_1P_1' = P_1\Delta_{p_1}$ by construction

$P_2P_2' = P_2\Delta_{p_2}$ by construction

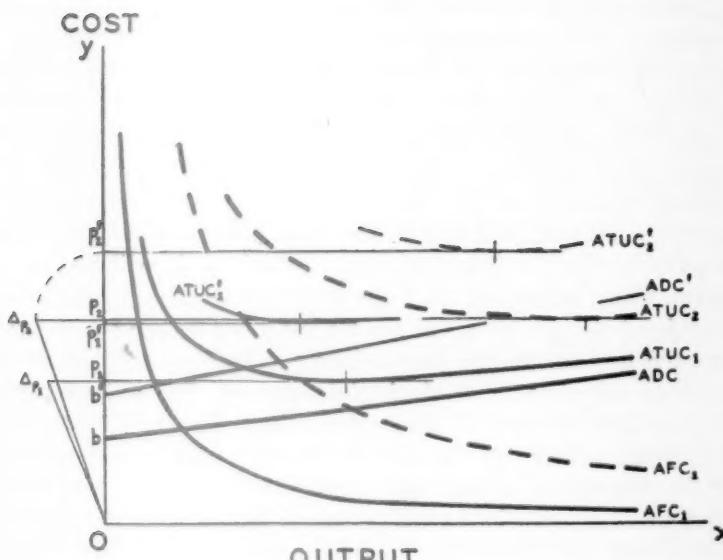
$\frac{P_1P_1'}{OP_1} = \frac{P_1\Delta_{p_1}}{OP_1}$ represents the relative increase in price for *A*

$\frac{P_2P_2'}{OP_2} = \frac{P_2\Delta_{p_2}}{OP_2}$ represents the relative increase in price for *B*

$\frac{P_1\Delta_{p_1}}{OP_1}$ = tangent of angle $P_1OP_1\Delta_{p_1}$

$\frac{P_2\Delta_{p_2}}{OP_2}$ = tangent of angle $P_2OP_2\Delta_{p_2}$

CHART IIIA



$$c_2 > c_1$$

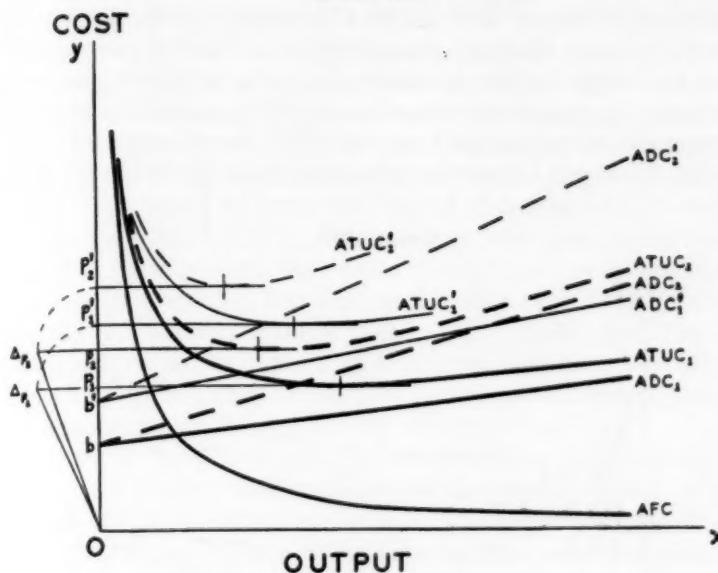
$$\text{angle } P_1OP_1\Delta_{p_1} > P_2OP_2\Delta_{p_2}$$

$$\therefore \frac{P_1\Delta_{p_1}}{OP_1} > \frac{P_2\Delta_{p_2}}{OP_2}$$

It should, however, be realized that because of the increase in prices and the reduction in output, there will be fewer total units of product. It is highly improbable that the elasticity of substitution of capital for labor can be sufficiently high to counterbalance this decrease in the real national income. From studies which my associates and I have made,¹⁴ it seems

¹⁴ Douglas, *The Theory of Wages*; Handsaker and Douglas, "The Theory of Marginal Productivity as Tested by Data for Manufacturing in Victoria," *Quarterly Journal of Eco-*

CHART III B



$$m_2 > m_1$$

$$\text{angle } P_1 O \Delta p_1 > P_2 O \Delta p_2$$

$$\frac{P_1 \Delta p_1}{OP_1} > \frac{P_2 \Delta p_2}{OP_2}$$

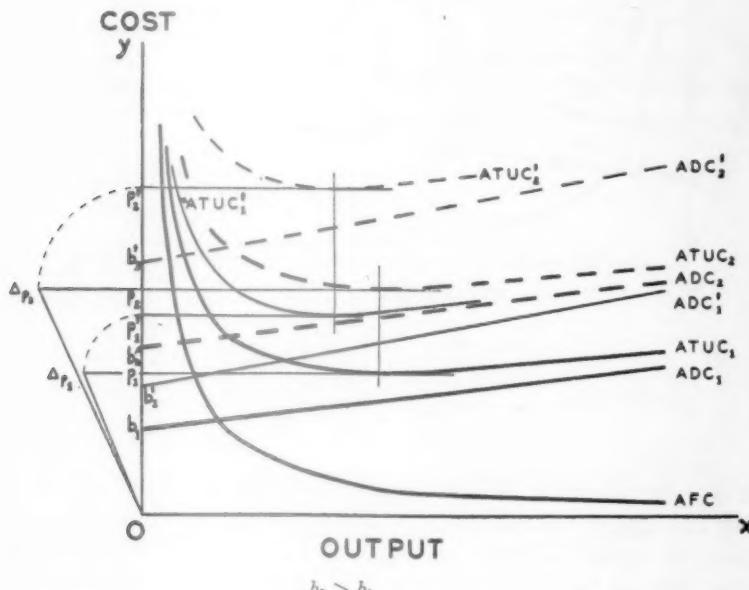
probable that the elasticity of substitution of capital for labor is not far from unity and that, therefore, since the differences in the relative increases in the prices of capital and consumers goods will be appreciably less than the relative decrease in output, the increased capital mixed with each unit of product will in all probability not be sufficient to counterbalance the decrease in the number of units.

(b) If fixed costs, c , and the relative b values are the same, but if m , or the slope of the reciprocal of the average productivity times the wage, differs, then those industries with the higher m will have the smaller proportionate increases in price at the minimum points. Chart III B gives a graphic solution of this point and Note 5 of the Mathematical Appendix (see footnote 5) gives the formal proof for this. Whether or not the capital goods industries or the consumers goods industries have a sharper negative slope in their average and marginal productivity curves is, of course, at present unknown, although it opens up a rich field for future research.

(c) So far as the b intercept value, or the average level of hourly wage rates relative to price is concerned, the higher is this value the greater is

the relative increase of the new minimum point over the original minimum. This is shown graphically in Chart III C in which only the b values differ. The proof is given in the Mathematical Appendix, Note 6 (see footnote 5). Since we have seen that the b values seem to be slightly higher in those manufacturing industries which turn out capital goods than in those which produce consumers goods this factor by itself may increase the prices of the former by slightly more than the latter although it is very doubtful

CHART III C



$$\begin{aligned} b_2 &> b_1 \\ \text{angle } P_2 O \Delta p_2 &> P_1 O \Delta p_1 \\ \frac{P_2 \Delta p_2}{O P_2} &> \frac{P_1 \Delta p_1}{O P_1} \end{aligned}$$

whether this would be the case were the economy as a whole and not merely manufacturing taken into consideration. While it is indeterminate whether the influence of any such possible difference in the b values would offset the tendency towards smaller increases of the larger fixed charges, it seems highly improbable that this would occur. If it did not do so, and if the prices of capital goods did not in fact increase by as much as those of consumers goods, then unless the fixed costs themselves moved upward, there would be, as stated, some tendency to mix more capital in each unit produced. But this would, in all probability, not be enough to counterbalance the decrease in the number of units produced.

(4) In a still longer run, however, would the level of fixed costs, or

the c 's, remain constant as we have thus far assumed as prices themselves shifted upwards? One force which would tend to raise them would be that replacements would ultimately have to be made and these would be at higher price levels than applied when the original capital goods were constructed. Hence, even if the interest rate were to remain constant, the amount of the annual fixed costs would increase, since these would be based upon a principle which in monetary terms would be priced higher. The "envelope," as it were, of fixed costs would, therefore, slowly swell outwards. Since the capital goods industries would have more capital per plant than would consumers goods, this would tend to raise the minimum points of the former by more than the latter, and consequently slowly narrow any tendency towards a smaller increase in the price of capital goods, and hence of mixing more capital with each unit turned out. Ultimately any differences in the rates of price increase would disappear and all prices would rise equally, thus removing any tendency to substitute capital.

But thus far we have been assuming that the supply of bank credit would not increase and that the interest rate would also remain constant. Are these assumptions, however, correct or even mutually compatible? Would not the businessmen with higher marginal costs at the same output seek to borrow more from the banks than before, and to increase their borrowings in the precise ratio of the increase in marginal costs? The Keynesians evidently believe they would and in doing so tend to assume an infinite elasticity in the supply curve of bank credit. If they did, then the more or less immediate increase in prices would be both equal to this increase in credits and equal as between industries. There would be no immediate added stimulus to the production of capital goods, but the real national income and the relative outputs of the various kinds of goods would be the same as before.

But the mere desire of businessmen to borrow more credit does not ensure that the banks will lend it. These institutions are commonly wary, and the mere increase in wage costs does not make them more ready to lend, as was abundantly demonstrated during the first year of our experience with the NRA. But even if the total amount of loans remained fixed and the supply of bank credit proved to be completely inelastic so that prices increased by only the proportionate reduction in output, the increase in the demand for loans would tend to force an increase in the interest rate. For with the same supply of credit, the demand curve for credit would have tended to shift to the right and hence would lead to an increase in the interest rate.¹⁵

Two consequences would follow directly from this. The increase in the interest rate would discourage investment, since some investment possibilities which would be profitable at a lower level of interest would now become undesirable. The output of capital goods would, therefore, decline not only

¹⁵ The only force which might restrain this would be if businessmen believed that the increase in marginal costs would result in diminished employment and output and hence did not increase their total demand for credit at the interest rates previously charged.

because of the general reduction in output and the shrinking of the existing capital structure to the new level, but also from the decrease in the demand for investment goods which would be caused by the increase in the rate of interest.

In yet another way the increase in the rate of interest would ultimately raise the level of fixed charges themselves, and hence greatly diminish any differences in the rates of increases of the minimum points on the total unit cost curves. For as new capital replaced old, it would not only cost more dollars for each physical unit, but it would have to earn more interest on each dollar in order for the investment to be made. This would raise the minimum points on the average cost curves for the capital goods industries in a double fashion, and still further diminish the demand for investment goods.

III

The economic realist is, however, likely to interject at this point that thus far we have been assuming perfect competition for all lines of industry, and that in fact not only is imperfect competition far more prevalent but that there is a marked difference in this respect between the capital goods and the consumers goods industries. As everyone knows, the former approach the conditions of monopoly and oligopoly much more closely than do the latter.¹⁸ We must, therefore, deal with the fact that in the capital goods industries there is a much more marked divergence between the average and the marginal revenue curves for the establishment, and that both are negatively inclined; whereas in the consumers goods industries these revenue curves have either much more gradual slopes, or in some cases such as agriculture have actually horizontal demand functions. As numerous writers on the theory of imperfect competition have pointed out, short-run equilibrium at least will be where marginal costs equal not price or average revenue but marginal revenue. The difference between average

¹⁸ Dr. Thorp's analysis of the degree of oligopoly in a number of important industries in his testimony before the Temporary Committee on Economic Policy was as follows:

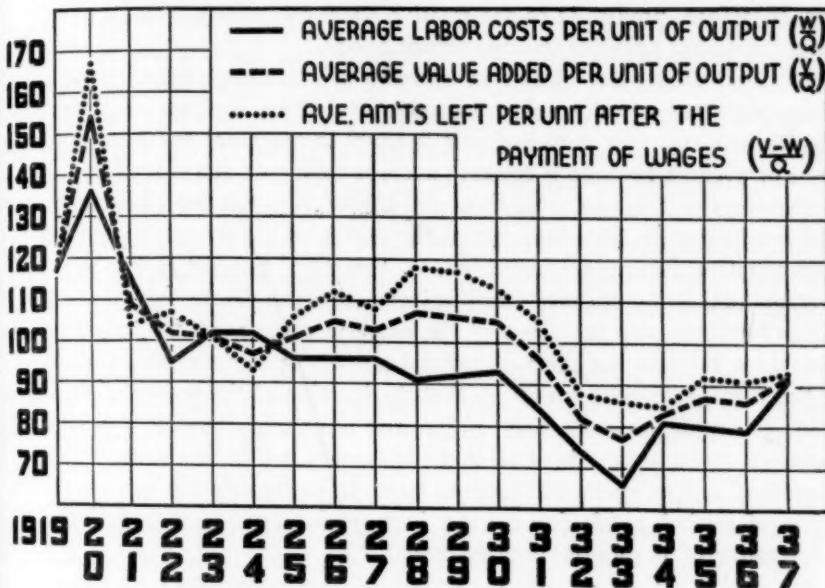
Industry	No. of Companies	Pct. of Control	Year
Automobile	3	86	1937
Bread and baking	3	20	1934
Can	3	90	
Cement	5	40	1931
Cigarettes	3	80	1934
Coal	4	10	1935
Copper	4	78	1935
Corn binders	4	100	1936
Corn planters	6	91	1936
Flour	3	21	1934-35
Plate glass	2	95	1935
Lead	4	60	1935
Steel	3	60	1935
Whiskey	4	58	1937-38
Zinc	4	43	1935

revenue and average direct cost multiplied by the units of output may in the short-run be equal to, greater than, or less than the average fixed costs.

Under these conditions, even if the capital goods and consumers goods industries have identical cost functions, the very fact that the first set is much more characterized by imperfect competition and oligopoly, will mean that equal increases in average direct and marginal cost will have dissimilar results in the following respects. First, whereas we have seen that the im-

CHART IV

A COMPARISON FOR MANUFACTURING FOR THE YEARS
1919-1937 OF (1) LABOR COST PER UNIT OF OUTPUT
WITH (2) VALUE ADDED PER UNIT AND (3) AMOUNTS
LEFT PER UNIT AFTER PAYMENT OF WAGES. (1923-25=100)



mediate impact in the perfectly competitive industries would be for output to be curtailed at the new point of intersection of the horizontal price (and marginal revenue) curve for the individual establishment, under imperfect competition it would be at the intersection of the higher marginal cost curve with the negatively sloping marginal revenue curve. The proportionate immediate reduction in output would, therefore, be less the more imperfect was competition in the sale of products. A second consequence would be that the price or the average revenue obtained by the individual firm, even with general demand the same as originally, would immediately rise by more for the imperfectly competitive industries than for the com-

petitive because of the fact that the new points of intersection will in the former case be at higher points than before, while in the latter they will be at points on the same horizontal line. The increase in price will, however, be only one-half the increase in marginal costs. This is a factor, however, which will send prices up by more in the capital goods industries than in those producing consumers goods, even though the output in the individual firm declines by less. But, as we have seen, the curtailment of output in each firm will cause the demand functions for the individual firms themselves to shift upward. This upward shifting will, however, be less for the capital goods industries than for consumers goods, since the proportionate decrease in output will be less unless this is offset by proportionately more inelastic demand curves for the industry. Whether this smaller shifting of the revenue curves will be sufficient to counterbalance the higher points of equilibrium on the same curve is at the present indeterminate, and we cannot, therefore, predict as to the relative short-run effects of an increase in wages upon the prices of the two sets of goods.

Is the situation any clearer in the case of the comparatively long run? Here, if entrance to the industry is completely free, the two conditions for equilibrium are: that marginal cost is equal to marginal revenue; and that price or average revenue is equal to average total cost, but this average cost, unlike the situation under perfect competition, is not at the minimum point and production is, therefore, not at the optimum for the individual firm.¹⁷ The negative average revenue curve is, therefore, tangent to the U-shaped average total unit cost curve. Equilibrium here is not determinate, since there is involved not only the effect of the wage increase upon the total average cost curve, but also the effect of reduced outputs upon the position and slope of the average revenue curves, so that the location of the points of tangency becomes highly indeterminate, unless the shapes of the cost and revenue functions are known. About all that can be said is that due to the reduction in general output there will have to be a decidedly smaller increase in the prices of capital goods for any net increase in investment to follow as a consequence of an increase in wage costs.

But under highly imperfect competition, entrance into such industries is by no means a free and fluid process. It is frequently difficult for new enterprises to accumulate the large amounts of capital which are a prerequisite for entrance, and the prospect of the large price slashes and consequent price wars which will be inevitable if the new firm is to attract business is also a powerful deterrent. Under these circumstances, output will be adjusted where marginal cost equals marginal revenue, but where average total cost may well be less than price. Here there will be higher than prevailing profits. It is possible under these conditions that an increase

¹⁷ See Harrod, "Doctrines of Imperfect Competition," *Quarterly Journal of Economics*, Vol. 48, pp. 450-51.

in costs resulting from higher wages will partially reduce these surplus profits and will not be wholly absorbed by price increases. If this is so, then the prices of the more monopolized capital goods may not increase by relatively as much as the more competitively produced consumers goods, and there may, therefore, be some substitution of the former for the latter. But we lack sufficient knowledge of the concrete values involved to be able to draw any definite conclusion on this point.

One thing certainly can be said which will apply for perfect as well as for imperfect competition. If the supply of bank credit is permitted to expand along with the increased wage cost per unit, the less necessary it is for the higher money costs per unit to reflect themselves in reduced outputs. This will lessen the contractive influences upon both consumers and producers goods and permit relative price changes and the relative elasticities of substitution to determine the degree of change in the output of each.

There is, however, one form of imperfect competition where wage increases may not result in any commensurate increase in prices. This is where the firms in a closely concentrated industry set themselves to maintain more or less rigid money prices for their products, and this has been shown by Gardiner Means to be a quite common proceeding.¹⁸ It is one which is also probably accompanied by a gentlemen's understanding about the respective volumes of production to be maintained. Such agreements are not very difficult to effect when an industry is dominated by a few large concerns who believe that it is better for themselves to agree upon prices than to provoke price wars. Oligopoly of this sort characterizes a considerable number of our leading industries and this is frequently accompanied by an agreed relative fixity of prices over considerable periods of time.

Since the cost schedules themselves will vary over time because of changes in wage rates and in the efficiency of labor, and also in the prices of raw materials, while the prices of these finished products are relatively pegged, it almost certainly follows that in these instances the respective marginal costs are rarely equal to the marginal revenues. It is improbable that in these cases production will in general be carried beyond the point where marginal cost equals marginal revenue, since this would diminish net profits. It is probable, therefore, that in the vast majority of instances production is not carried up to the point where marginal cost equals marginal revenue, and that consequently in these cases the latter tends to exceed the former. The force which restrains output from being expanded under these circumstances is the well-supported fear that if this were done, prices would have to be reduced, and that this would probably entail a price war with the other giant corporations in the industry.

Where this is the case, and I suspect that under our present widespread

¹⁸ This will mean a decreasing exchange value in a period of rising prices, and hence an increase in quantity demanded; while quantities demanded will decrease in periods of falling prices because of the higher exchange value per unit.

conditions of oligopoly it is quite common, an increase in labor costs may still leave the marginal costs less than the original marginal revenue from the same number of units. Where this is true, there will be no increase in price (unless the fixed price policy is abandoned), and no decrease in the quantities produced. To the degree that such conditions of oligopoly are more characteristic of the capital and durable goods industries than of consumers goods (and all the evidence indicates this is the case), then the increase in price flowing from an increase in wage rates will tend to be less in the former case than in the latter. This would in itself by the principle of substitution cause the relative demand for capital goods to increase, and hence increase the rate of investment. But against this would have to be set the fact that the increase in the absolute or relative price of consumers goods would mean a decrease in the quantities of these goods demanded and hence produced. Such a decrease would by itself diminish the demand for capital goods, and we are again faced with the oft-restated problem of this paper; namely, whether the possible increased mixture of capital in each unit of goods produced would be sufficient to compensate for the diminished number of units produced.

IV

Thus far, I have discussed this issue primarily in terms of static and equilibrium economics. I hope it will not be regarded as an improper combination of two widely differing types of economic analysis if I turn to an examination of the historical movements of wages in manufacturing during the past twenty years in order to test the accuracy of two theories which are very commonly advanced by a certain type of economic theorist. These are the contentions: that the ultimate cause of business depressions in general, and of the difficulties from 1929 to the present in particular, lie primarily or exclusively in prices of labor which are "excessively" high in relation to the prices of the products made by labor; and that the upward movement of wage rates during the last five years has taken so much profit out of industry that the inducements to invest have been dried up, and hence has sent the capital goods industries into the doldrums.

In dealing with these issues, I know of no substitute for the common sense advice given by Richard Jones a century ago:¹⁹ "If we wish to make ourselves acquainted with the economy and arrangements by which the different nations of the earth produce or distribute their revenue, I really know of but one way to obtain our object, and that is to look and see."

Many of the economists who have blamed high wage rates in comparison with prices as the cause of recent depressions have neglected to look at the facts to see if they confirmed or disproved these hypotheses, which have been accepted as dogmas. Moreover, most of the theorists who have deigned to sully their hands in statistics have chosen to compare the movement of

¹⁹ Richard Jones, *Introductory Lecture on Political Economy*, p. 31.

hourly wage rates with that of wholesale prices, and have failed to see that this is not a valid comparison of labor costs with the prices of the services performed by labor. For since output per hour is not fixed but variable, and shows indeed a pronounced tendency to increase with the years, the labor costs per unit of output can decrease markedly even while the hourly wage rates are advancing. Moreover, an index of the relative prices at which manufactured goods sell is not necessarily a measure of the relative average amounts which manufacturers have received for processing and fabricating. For the major ingredient in the price of manufactured goods is the cost of the raw materials of which they are composed. This percentage in 1935 amounted to approximately 58.²⁰ A fall of one-fifth in the price of raw materials would, therefore, cause in itself a decrease of about 12 per cent in the price of finished goods even though the absolute amounts received by the manufacturers for fabrication and processing did not decrease in the slightest. A large part of the fall in the price of manufactured goods during recent years has, indeed, been caused by decreases in the prices of these raw materials rather than in the prices for fabrication and processing. In order to arrive at the latter, it is necessary to deduct material costs along with fuel and power from the gross sales value, and thus obtain the values added by manufacturing. These are given by the Census for the odd-numbered years, and have been interpolated for the even-numbered years by methods which are described in a footnote.²¹ This series was then reduced to index numbers with 1923-25 as a base, and these were then divided by the index of production to obtain an index of the average price received by manufacturers per unit of goods fabricated or processed.

The resulting index can then be compared with one for labor cost per unit of output, which in turn is obtained by dividing the index of total wages paid out by the index of physical output. Since the denominator in both of these indexes is the same, namely, the index of physical output, it follows also that the errors arising from changes in quality or in the amount of fabrication which often vitiate price comparisons or comparisons between labor costs and wholesale prices, are automatically eliminated.

With several associates,²² I have been working on this question for some time. In the following table and in Chart IV, these comparisons are shown for the nineteen years from 1919 through 1937 for all manufacturing as a

²⁰ I.e., 26.3 billions of the 45.8 billions of gross sales value consisted of the cost of raw materials, fuel, etc.

²¹ This consisted in brief of using the relative gross sales value of manufactured products, i.e., the relative average prices of manufactured goods (P) multiplied by the relative physical output of manufactured goods or (Q) modified by the relative change between census years in the proportion which the values added by manufacturing formed of this gross value.

²² Chiefly, J. Donald Brumbaugh, Yetta Abend, and H. Gregg Lewis. The complete results will shortly be published in a separate study, and will present monthly indexes for all manufacturing, and yearly indexes for the fifteen major subdivisions of manufacturing.

TABLE I

A Comparison for Manufacturing for the Years 1919-37 of (1) Labor Cost per Unit of Output with (2) Value Added per Unit and (3) Amounts Left per Unit After the Payment of Wages (1923-25 100)

Year	Index of Average Labor Costs per Unit of Output	Index of Average Value Added per Unit of Output	Index of Amounts Left per Unit After the Payment of Wages	Ratio of Index of Value Added to Index of Amounts Left
	$(\frac{W}{Q})$	$(\frac{V}{Q})$	$(\frac{V-W}{Q})$	$(\frac{V}{W})$
1919	117	117	117	100
1920	136	154	167	113
1921	115	109	104	95
1922	95	102	107	107
1923	102	101	101	99
1924	102	97	93	95
1925	96	101	106	106
1926	96	105	112	109
1927	96	103	108	108
1928	91	107	118	117
1929	92	106	117	116
1930	93	105	113	112
1931	84	96	105	114
1932	74	82	88	111
1933	66	77	86	117
1934	81	83	85	103
1935	80	87	92	109
1936	79	86	91	109
1937	91	92	93	101

whole. A third index has been added to the other two. This is the average amount left per unit from the value added by manufacturing after wages were paid.

The following facts become evident from these indexes:

1. That the depression of 1920 occurred at a time when the prices of manufacturing services were increasing very much more rapidly than were labor costs, rather than the opposite, which is claimed by the theorists whom I have mentioned. For in that year, the average price received by manufacturers for fabricating and processing was 32 per cent higher than in 1919, although labor costs per unit were only 15 per cent more.
2. That recovery began in 1922 despite the fact that in 1921 the ratio of wage cost per unit to value added per unit was high since the latter had fallen by much more in 1921 than the former.
3. That in 1929, though labor costs per unit of output were 8 per cent less than during the base period of 1923-25, the average amounts received by manufacturers for each unit of output were actually 6 per cent more. This rise in the price of fabrication and processing in the face of a fall in labor costs is presumptive evidence of a large degree of imperfect competition, quasi-monopoly, and oligopoly. The result was to make the amount left per unit after wages were paid 17 per cent higher than it had been

in 1923-25. The advent of the Great Depression cannot, therefore, be charged to wage costs which were relatively high in comparison with prices. Instead, precisely the opposite was the case.

4. That throughout the course of the depression, the index of value added per unit was above that for unit labor costs. Thus, during the four years of 1930-33, inclusive, the relation of the former index to the latter was from 11 to 17 per cent higher than it had been during the base years of 1923-25, which was after all a period of relatively high prosperity. In 1933, indeed, the disparity between the two indexes was as great as it had been in 1929 at the peak; namely, 17 per cent.

5. That while this disparity was reduced during the four years of 1933-37 which followed, the index of unit values added still remained above that of unit labor costs. Only by the late summer of 1937 did the former index draw abreast of and slightly exceed that for the price of manufacturing services.

I am ready to grant in this latter instance that it is quite possible the present recession may have been aided by an undue increase in wage costs in relation to prices, although other factors such as the withdrawal of governmentally created purchasing power may have been a much more effective cause. But I submit there is no evidence to support this contention for the two great depressions which we have experienced during the last twenty-five years. On the contrary, these occurred when from the wage-price standpoint one would expect conditions to be favorable to the capitalistic groups. The manufacturing sector, though it is the most important in our economy, may not be sufficiently large to justify complete conclusions but the results obviously suggest that the cause for these two great crashes may have lain in other difficulties. One of these may have been the failure of the incomes of wage earners, farmers, and lower-salaried folk to purchase the actual or potential products of mass production industries at the prices charged by quasi-monopolistic enterprise. This might have operated directly on the consumers goods industries, and it could have also operated indirectly on the capital goods industries. For if American mass production enterprise was committed to a program of pegging (or increasing) prices in the face of falling unit labor costs so that the potential output of existing plant could not be taken off the market, what inducement was there towards the end of the period for these enterprises to make still heavier investments in plant and machinery.

In closing, therefore, I should like to urge that we practice a greater degree of realism in our analysis of the effect of wages both upon investment and upon business depressions and that we test abstract theory with the cold and hard applications of fact. The material given in the latter part of this paper may, therefore, help to correct what some may feel to have been an excessive formalism in the earlier part of the analysis.

THE RELATION OF WAGE POLICIES AND PRICE POLICIES¹

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I shall consider wage policies and price policies from the point of view of the economy as a whole and not from that of either a particular firm or that of any particular section of the economy. The policies are conceived to be directed to the object of achieving and maintaining the prosperity of the economy as a whole. The main difficulty of this problem lies in the danger of taking propositions that have been established as true when applied to sections of the economy and illegitimately applying them to the economy as a whole. What is true of a firm or of a particular industry or of a set of industries need not be true of the economy as a whole. To draw attention continually to such relationships between the parts and the whole is probably the most distinctive function of the economist.

A very crude example of this error would be to argue thus: Depression in a particular industry may be cured by a restriction of output; i.e., a higher price policy which would lead to an increase in the profits made in the industry. Therefore, to cure depression in the economy as a whole all that is necessary is that there should be a general restriction of output or a general policy of raising prices. It is doubtful whether this argument has ever been put forward quite as crudely, even though there have been governmental policies of price recovery that have applied such measures to large sections of the economy. It is, however, illustrative of the kind of illegitimate generalization from a section of the economy to the economy as a whole to warn against which economists have correctly applied the principle that came to be known as Say's Law.

Very roughly speaking, Say's Law points out that the demand for the output of any industry (or firm or individual) comes from the supplies of all the other industries (or firms or individuals). This is because these supplies translated into money constitute the demand for the output of the first industry (as well as for each other's output). A general restriction of supply would bring about a general restriction of demand, and, therefore, could not be depended upon to increase prosperity. Total demand is not independent of total supply.

Now there is some plausibility to the argument that a general policy of raising price by restriction of output can increase prosperity in the sense of raising prices or profits. And, indeed, we shall see later the argument has some validity. But it is hardly possible to argue that such a price policy can increase prosperity in the much more fundamental sense of increasing

¹ I am indebted to Professors Oskar Lange, Paul H. Douglas, and Albert G. Hart, of the University of Chicago, for helpful discussions in the course of my preparation of this paper.

total output or employment. However, a similar generalization is made with respect to wage policy. A cut in wages in one industry can increase both profits and employment in the industry. Similarly, it is argued, a general policy of reduction of wages will lead to an increase in profits and in employment in the whole economy.

The parallel warning for this illegitimate generality from a part of the economy to the whole has been given by Mr. J. M. Keynes.

Again speaking very roughly, what Mr. Keynes has pointed out is that the costs incurred in the production of any commodity constitute the incomes out of which comes the demand for all the other communities. A general reduction of wages would constitute a reduction in costs, in incomes, and in demand; so that it could not be depended upon to increase prosperity. This may be called "Keynes's Law." Total demand is not independent of total cost.

The argument that a reduction of money wages will increase employment is not often presented in the extremely crude form here indicated. It is usually refined and qualified in one of two ways. Sometimes the qualifications are such as to describe independent conditions under which the results may be expected to hold, and an attempt will be made below to develop a general scheme into which such situations will fit. Such a scheme must be built on the fundamental, independent determinates of the level of employment, the estimated profitability of investment, the propensity to consume, the liquidity-preferences, and the conditions governing the supply of money.

Sometimes the qualifications are such as to describe dependent concomitants which are nothing but logical implications of the desired results. One example of this is the argument that a reduction in wages will increase output and employment if MV remains the same. This is indisputable, for if the same amount of money is spent on goods that are cheaper (because wages and costs are lower), then it must be true that it is being used to buy a larger quantity of goods. But this is no solution for it merely shifts the question to, "Under what condition will MV remain the same?" Another example is the argument that the extent to which a cut in money wages will increase employment is governed by the elasticity of demand for labor. This may mean the elasticity of demand for labor with respect to the real wage or the elasticity of demand for labor with respect to the money wage. If the former, the question is begged in one way, since a reduction in the real wage is a concomitant of an increase in employment with the resultant decline in the marginal productivity of labor. A correct translation of the argument is: there will be an increase in employment if such increase reduces the marginal productivity of labor. If the latter, the question is begged in another and more direct manner, for the elasticity of demand for labor with respect to the money wage is nothing but a

measure of the degree to which a cut in money wages will increase (or decrease) employment. We may, therefore, leave the refinements of our second form of illegitimate generalization and concentrate a little more closely on Say's Law and Keynes's Law. We shall find that these parallel laws meet.

Say's Law is usually found in a more rigid form than the rule given above. It declares not merely interdependence but equality between total supply and total demand. If this means that the total quantity of each good actually demanded is equal to the total quantity of it that is actually supplied, it is a true but not very useful identity, since the two phrases represent the same quantity of goods that changes hands in a given period. If it means that a general increase in output in the "right" proportions will increase total money expenditures by exactly as much as the increase in the selling price of the total output, this is again true but not much more useful. For this immediately follows from the identity of the monies paid for the goods with the monies received for them. Furthermore, it is misleading to suggest that this identity depends upon the maintenance of "right" proportions.

But such interpretations of Say's Law in terms of tautological identities will not do. They prevent the law from being used for the purpose for which it was designed. This was to show that although a section of the economy may get into trouble by producing too much relatively to the rest of the economy, a general overproduction is impossible since it creates its own demand. For this it is not sufficient to show that if output in general is increased, the increase in demand in the sense of the amount paid for the output remains equal to the supply in the sense of the amount received for the output—which is what the identities repeat—since this is true also of any particular section of the economy and does not prevent it from getting into trouble through overproduction. What has to be shown is that the increase in demand that accompanies a general increase in output will be equal not merely to the increase in receipts but to the increase in costs, including such real profits as are necessary to maintain the increase in output. The law must say that demand is equal not only to supply but to cost, whatever the level of output and employment. Such a law would be adequate for the purpose. Unfortunately there appears to be no reason for expecting such a law to be true, but this relationship between demand and cost sounds something like Keynes's Law that "demand is not independent of cost." Perhaps the more exact formulation of this will contain some clew.

A more complete formulation of Keynes's Law does indeed say that under certain circumstances a change in wages and so in total costs including normal profits will bring about an equal change in demand, but this is not applicable at all to our case. For here it was to be applied to the effect of an increase in output while this Keynesian proposition is strictly

confined to a simplified case where there is no change in output but only a change in the wage rate which, just because it makes demand increase as much as cost, prevents any change in output. It is the very last thing, therefore, to be used to show that an increase in output would always be validated by a sufficient increase in demand.

There is, however, another rule to which Mr. Keynes has drawn attention, which is connected with what happens to the relationship between total cost and total demand when output increases. This is the rule that as people's real incomes increase they spend on consumption only a part of the increase, saving the rest. (The marginal propensity to consume is less than unity.) If, as Mr. Keynes usually does, we assume the rate of investment as given and determined by factors other than current consumption, then this rule directly contradicts the non-tautological Say's Law that we saw was necessary to show that a general increase in output generated its own demand. An increase in output will always fail to increase demand by as much as cost, because the extra demand is only a part of the extra income and the extra cost is the whole of the extra income, so that demand will fall behind cost as surely as the part is less than the whole.

We may instead follow Dr. Lange and make the more realistic assumption that an increase in consumption increases the marginal efficiency of investment so that as output of consumption goods increases, there is also an increased demand for newly manufactured assets. This would make it possible for demand to increase by exactly as much as cost when output increased; namely, when the marginal propensity to consume, plus the marginal propensity to invest (the increment of investment that resulted from the increment of consumption that resulted from one unit increase in income) were exactly equal to unity. This is not only indefinitely unlikely a priori, but from the degree of short-period stability of employment that we actually experience it would appear that this sum is definitely less than unity. If the marginal propensity to consume plus the marginal propensity to invest were equal to unity, there would be no limit to the rate of expansion or contraction of employment. While if it were at all greater than unity any expansion or contraction of output would be of a self-accelerating or explosive nature. Fluctuations in employment, like those of the trade cycle, might be expected to take several weeks, or perhaps days, instead of years.

What is really implied in Say's Law is that every individual desire to save is in the nature of a desire to buy a newly manufactured asset. Any increase in income from an increase in output would all be spent either on consumption goods or on new investment goods and the increase in demand would be equal to the increase in costs, including profit, so that no losses need be incurred. But in any modern economy where individuals can save and use their savings to demand not only new investment goods

but already existing assets, the whole scheme breaks down and—what so many economic theorists still find so surprising—an equilibrium with unemployment is possible where an expansion of output would lead to losses and a return to the previous equilibrium level of employment.

It should be observed that this criticism of Say's Law does not directly mention the existence of money. What is wrong with it is that it makes a real proposition about the effect of an increase in output on profits which is based upon the questionable assumption that every desire to save is a desire for newly manufactured assets, but which acquired great prestige by being confused with the tautologies considered above. The "truth" of these is, of course, above question.

Economists who have felt something to be wrong have, however, tried to find a flaw in the tautologies instead of in the proposition about profits. Consider the tautology that the supplies of $n-1$ commodities in exchange for the n th is identical with the demand for the n th commodity and so total supply of all the n commodities for each other is identical with the total demand. This is independent of the size of output or of prices or of anything else. Now let one of the commodities be forgotten in the calculation; this will upset everything for the supply of $n-2$ commodities for the n th will not be identical with the total demand for the n th commodity, unless none of the $n-1$ th commodity (the forgotten one) is offered against the n th commodity. Now if none of the forgotten commodities is offered against any other commodity and no other commodity is offered against it, it is neutral as it were and it will not matter if it is left out of account. The calculations will still turn out correct.

Money was considered to be such a commodity if there were no change in the total amount of it. For in that case all goods other than money can be conceived of as exchanged only for each other—money acting merely as an intermediary—no money being acquired or given up. Money can therefore be left out of the picture as it was by Say and by other classical economists who regarded money as a "veil" that merely obscured the workings of the economy; so that an increase in the supply of goods other than money would be accompanied by an equal increase in the demand for them. But if there is a change in the amount of money it is no longer "neutral" and leaving it out of the account will upset the calculations. If the amount of money increased, the flow of new money was imagined to constitute a demand for commodities not originating in any supply of commodities and so the demand for commodities became greater than the supply; and vice versa if the amount of money diminished. The existence of money and the possibility of changes in its total amount (as well as changes in the amounts held by particular individuals or desired to be held by them) was thus supposed to overthrow the tautology or at least its applicability to a monetary economy, and so to admit the possibility of un-

employment, inflation, dislocation—all the horrors of the real world.

It might be thought that the tautology could be re-established in all its impregnability by simply including money among the commodities and then total supply would equal total demand whatever happened to the amount of money or its distribution or the desire for it. But this would have taken away the basis of the whole concept of "neutral" money and of many a strange mythology about the beauties of a barter economy in which money did not exist, or could be ignored, and where there was always equilibrium with full employment. As soon, however, as it is recognized that the significant part of Say's Law is the real proposition about saving and investment and profits and no supply-equals-demand tautology, this kind of concern with the non-neutrality of money, as the villain of the piece, loses all significance. One can only regret the energy and ingenuity that has been spent by people like Dr. Koopmans in developing the ramifications of monetary neutrality.

Instead of money, one may attempt to introduce labor as one of the items in the tautological checkerboard so that unemployment of labor does not mean that an increase in output would not create its own demand, but that there is a relative oversupply of labor (relatively to commodities). If only more commodities were produced, this would increase the demand for labor. But this is an even more transparent trick than the one with money. It is true that if more commodities were produced there would be more employment, but that is not because the products are offered in exchange for labor, rather, it is because labor is needed to produce the products. And if there were such an increase it would involve losses (because the marginal propensity to consume plus the marginal propensity to invest is less than unity) and so there would be a return to the old position. One cannot get anything out of trying to trick the tautologies. However, we must not let them trick us into taking up too much time with them. We will, therefore, leave them here and go on to consider how we can apply our analysis to the question of the relation of wage policies and price policies.

The first and simplest case to be considered is that which may be called the Keynesian special case. Here it is assumed that all prices other than wages are perfectly flexible and that the monetary supply is infinitely elastic.

From the assumption that all prices other than wages are perfectly flexible, it follows that there can be no unemployment of such factors. All those that have a marginal productivity greater than zero are employed because their price falls as much as is necessary, relatively to wages, to make their employment profitable. The assumption is plausible and in conformity with the assumption of rationality of entrepreneurs and capital owners who would rather get something for the use of their property than let it be idle, while labor has nonrational money-wage demands.

The assumptions of an infinitely elastic supply of money with respect to the rate of interest implies a rigid interest rate. This is not a plausible assumption but only a device that is useful as a preparation for the examinations of the more realistic situations where the monetary supply is not infinitely elastic and the rate of interest consequently is not absolutely rigid; because it enables us to isolate the influences of the rate of interest by first examining situations in which it cannot change.

In this case there can be no such thing as a price policy separate from a wage policy, since the level of wages determines all prices, the level of real output having been determined independently of wages and prices, by the level of real investment (itself determined by the rate of interest and the schedule of the marginal efficiency of investment), and the propensity to consume. Any policy that determines the level of wages would thereby determine all prices, total output and employment, the ratios between all the prices being unaffected by the decision as to the level of wages and so also of prices.

Next let us suppose the wage, too, to be flexible, whether this is because of or in spite of wage policies. Then if the rate of interest, the schedule of the marginal efficiency of investment, and the propensity to consume are such that the equilibrium level of employment is less than full employment, unemployment will cause wages to fall, and prices, as we have seen in the previous case, will move together with wages. But this does nothing to change the situation and so wages and prices would keep on falling indefinitely. We see that if the monetary supply and all other prices are perfectly flexible, then a rigidity of the money wage is necessary to give determinacy or stability to prices. And not only to prices. For if the fall in wages and prices begins to be anticipated the schedule of the marginal efficiency of investment will fall and there will be a decline in output and employment as a result of the wage flexibility. An expected fall in prices and uncertainty about the maintenance of economic activity will increase the desire to hold cash. This will make no difference in our case because the infinitely elastic supply of money will prevent it from doing any harm, but if the supply of money were less than infinitely elastic this increase in liquidity-preference would raise the rate of interest and in this way again work to diminish investment, output, and employment. But these are arguments about expectations and a little beyond our present scheme.

We may now give up the assumption of infinitely elastic monetary supply so that the rate of interest is no longer rigid while still assuming that all prices other than wages are perfectly flexible. We now have either a fixed amount of money, so that any increase in the desire to hold money will merely raise the rate of interest, or else a flexible monetary policy that increases the amount of money when the rate of interest rises (as a result

of an increase in the desire to hold cash) but does not increase the amount of money sufficiently to prevent any rise in the rate of interest. If it did, the supply of money would be infinitely elastic. An increase in the desire to hold cash will now raise the rate of interest while a decrease in the desire to hold cash will lower the rate of interest.

The level of money wages will now determine not only prices but the volume of employment and output. At a lower level of money wages less money would be needed, if the output were the same and all prices (including prices of assets) were lower in the same proportion as wages, so that people would want to hold less money and the rate of interest would fall. This would tend to increase investment and real output and employment and a new equilibrium would be reached with a lower rate of interest, a smaller amount of money, and a larger volume of economic activity (unless there were full employment to begin with, in which case there would be an inflation that would restore wages to the original level). It should be noted that this is not the reason for arguing that a lower wage must involve more employment, if M or MV is the same. M and MV cannot be the same unless we assume that there is a deliberate and successful monetary policy to make it so. On our assumption, M will be less at the lower rate of interest if there is any flexibility of the monetary supply at all, and V will be less because at a lower rate of interest there is less incentive for economizing the use of cash. *or increase in*

If now, with the rate of interest flexible we assume the wage rate also flexible, we get a tendency toward full employment. As wages and all prices fall there is a decline in the need for cash to fulfill all the purposes for which it was previously held. This will lead to a fall in the rate of interest (unless it is offset by an increase in liquidity-preference on account of an anticipated fall in prices or output). The lower rate of interest will increase the rate of investment (unless the schedule of the marginal efficiency of investment has declined because of expectations of a fall in prices or output) and this will lead to an increase in the output of consumption goods (unless prospects of bad times or falling prices have weakened the propensity to consume). If all the hurdles are crossed, wages keep on falling until full employment is reached. It is important to note that the reduction in the rate of interest is what does the trick and to remember that if the rate of interest is reduced directly, instead of by means of falling wages, the obstacles mentioned, which may be proof against any subsequent further fall in the rate of interest, will not have occasion to arise.

Analytically, there is no difference between wages and the price of any other factor of production. The four cases we have examined so far might be repeated with wages perfectly flexible throughout and, say, rents playing the part that we have attributed to wages. If rents were fixed in money, and wages, as well as all other prices, were perfectly flexible, the level of

money rents would determine all prices and if the monetary supply were imperfectly elastic it would also determine the rate of interest and the degree of employment of land. Labor would always be employed and only land could be unemployed.

We may now go on to consider cases where there are two factors the rigidity of whose prices will be considered. We may call them labor and land. Assume again a rigid rate of interest (infinitely flexible monetary supply). We now must see that prices depend upon both wages and rents. The rate of interest determines the level of employment of labor and of land only when we are given the prices of both labor and land. But if both of these prices are raised or lowered in the same proportion, this will merely change all prices in the same proportion, leaving employment of both labor and land at their previous levels. With the given rate of interest it is only changes in the ratio between the prices of the rigid factors that can affect the real situation.

The higher one price relatively to the other, the lower will be the degree of its employment and the higher will be its real rate of remuneration, and, consequently, the higher will be the degree of employment of the other factor and the lower its real rate of remuneration. But we can no longer say that the rate of interest uniquely determines the volume of economic activity. For the propensity to consume, and even more so the inducement to invest, may be more responsive to the one price than to the other, and if this is the case there will, with the same rate of interest, be a greater rate of investment and/or a greater output of consumption goods if the factor to which the response is greater is cheaper relatively to the other.

Next we may suppose the prices of the two factors to be flexible, while the rate of interest is rigid. This case has been examined above where we saw that prices fall indefinitely while employment does not change. We now have an amendment to make to the previous result where it appeared that although there was no stability of prices, there was determinacy of output and employment of labor, while land and all other factors were fully employed. The indefensible asymmetry between labor and land was due to an implicit assumption that while wages were flexible they were not as perfectly flexible as the prices of all these other factors, so that when unemployment made wages fall and keep on falling, other prices always managed to fall as much as necessary relatively to wages to keep fully employed, while wages never fell relatively to other factor prices even enough to cause any shift of unemployment from labor to the other factors. Perhaps we should say that the assumption was that wages were plastic, i.e., they fell and kept on falling at some finite rate as long as there was unemployment of labor, but the prices of other factors were perfectly flexible so that they were always able to catch up with the plastic wage rates.

Now we have wages and rents both plastic, both falling. With the qual-

fications made above the rate of interest determines the volume of employment of land-cum-labor. How the employment will be divided between land and labor depends upon their relative prices and that is indeterminate except in so far as this is given by some lag in adjustment while prices are perpetually falling.

If we now allow the rate of interest to be flexible, we see that wages and rents determine both prices and output. At lower wages and rents the ratio between them unchanged, all prices will be lower, less cash will be needed, and there will be a lower rate of interest and a greater volume of activity (unless there was full employment to begin with, in which case there will result an inflation which restores wages and rents and all other prices to the original level).

If, with a flexible interest rate, wages and rents are plastic, then there is the same tendency toward full employment (of both land and labor), as stated above, with the same possible obstacles that can be avoided in the same way; namely, by reducing the rate of interest directly via an increase in the supply schedule of money, instead of indirectly, via reduction in wages, rents, and prices.

We have now examined a simplified set of eight different cases consisting of the combinations of a rigid and a flexible interest rate with one factor price fixed, one factor price plastic, two factor prices fixed, and two factor prices plastic, all other prices considered to be perfectly flexible. These simple tools enable us to see the effects and the mechanism of the effects of absolute and relative changes in factor prices. We can use them for analyzing more complex and more realistic cases if we remember that the results we get about the relative prices of land and labor are just as applicable to any pair of prices—prices of different kinds of land, capital goods or services, or prices of different kinds or grades of labor. Even the prices of products can be treated in the same way. In so far as products are used in the production of further products they are factors and in so far as rigidity of their price relatively to other prices limits the demand for them and so for the factors used in making them, the repercussions on the economy as a whole are just as if these factors had rigid prices (apart from the effects due to the different distribution of the receipts from the sale of the rigidly priced product). It may sometimes be convenient to fit such a case into our framework by supposing the rigidity in the product-price to be due to the incorporation of a fictitious rigidly priced factor, supplied by the entrepreneur at the stage of production where the factor in question emerges.

We may conclude by stating as examples some of the more obvious results we can get out of our scheme that have some bearing on wage and price policies.

A policy of general cost reduction amounts to nothing but an inconvenient and roundabout attempt at lowering the rate of interest when that can be

done directly by increasing the amount of money. A general policy of raising prices is even worse. Its direct effects, just like lowering wages, amount to nothing because they cancel out, while the indirect effect on the rate of interest is to raise it and so to curtail output and employment.

Significant policies must, therefore, be concerned with the ratios between costs or between prices, and not with absolute levels, and there might be a useful purpose served in breaking down some price or cost rigidities while leaving others. Our examination of rigid rents shows that they are beneficial to the employment of labor though they adversely affect labor's wages. For the lower one price factor is relatively to the other, the higher will be the degree of its employment for any given rate of interest, and the higher will be the rate of interest that is low enough to give it any given degree of employment (though the lower will be its real remuneration for any given degree of its employment). But this is so only if we assume the rate of interest, the schedule of the marginal efficiency of investment, and the propensity to consume as given. This we cannot do. For in so far as prices other than wages are kept up by rigidities, a larger proportion of income will go to non-wage earners with a lower propensity to consume so that total real income (and output and employment) will be less for any given rate of investment. Further, there will probably be less investment for any given rate of interest because there will be less land and existing equipment available to co-operate with the new equipment—though this effect is uncertain. Finally, there will be a higher rate of interest for any given condition of monetary supply because of the greater demand for cash at higher prices (and possibly also because of the greater demand for cash by property owners compared with workers). Therefore, rent rigidity will almost certainly be harmful to both employment and real wages of labor.

Since rent and wages, both being prices of factors of production, play the same part in our analytical structure, the same argument might be applied to wage rigidities. A particular kind of labor, by keeping up its wage through restricting entry to its craft, may cause employment in general to diminish. The removal of such a rigidity by, say, allowing or encouraging other workers to enter this trade and lowering the wage therein may seem to have the same beneficial effect as the removal of a rigidity in rents or in the price of some other non-labor service or product. But the benefits are much more doubtful. There may not be much difference between the propensity to consume of the different kinds of workers and in so far as the breaking down of the rigid price shows itself in the cheapening of a product consumed by wealthier people the shift of real incomes to them is likely to diminish total output by lowering the social or representative propensity to consume.

In deciding which prices it is desirable to reduce relatively to others, we are thrown back on the criteria developed above as to the effects on employment of the relative prices of labor and land, given the rate of interest. That

factor price should be lowered to which the marginal efficiency schedule of investment and the marginal propensity to consume are most responsive. A conspicuous case of this would be the wages in the building trades, a reduction of which would so much increase the marginal efficiency of investment in housing as to swamp any of the offsetting influences. Examples of a price reduction that could considerably increase the propensity to consume seem to be more difficult to think of.

But even in such "ideal" cases as the building trades example, we should be careful to remember that it is only the relative reduction in this wage that is significant, and if it is easier to raise other wages instead this will do the trick just as well as long as monetary policy can maintain the same rate of interest; i.e., as long as the amount of money can be increased so as to satisfy the greater demand for cash at the higher level of prices.

Finally it should be noted that in many instances the adjustment of relative prices is most easily and automatically obtained as a by-product of the more straightforward attempt to increase economic activity by operating on the ultimate determinants; i.e., lowering the rate of interest by an easy money policy, raising the marginal efficiency schedule of investment by public works and subsidies, and increasing the propensity to consume by redistribution of income from savers to spenders.

By this means the prices that would be relatively higher are pulled up by increased demand—which is what is wanted—rather than their being pushed up by price policies. In some cases—like our building trades example—a general expansion may pull up the prices that ought to stay down if there is to be a better use of resources, and it is desirable to discourage these prices from going up or to force them down. But even here we cannot escape from the same fundamental criteria—the ultimate determinants of the level of economic activity. All policies of general or particular, of absolute or relative prices of factors or of products can be decided only in the light of the effects on the rate of interest, the marginal efficiency schedule of investment, and the propensity to consume.

AN APPRAISAL OF THE FACTORS ("NATURAL" AND "ARTIFICIAL") WHICH STOPPED SHORT THE RECOVERY DEVELOPMENT IN THE UNITED STATES

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It is unnecessary, I think, to present a detailed statistical picture of the downturn of business which followed August, 1937. It was the most rapid, though, of course, not the most extensive, shrinkage in business activity which has ever been recorded in the United States. Income payments as estimated by the Department of Commerce declined from 5,900 million dollars in September, 1937, to 4,900 million in May, 1938, about two-fifths of this decline being seasonal. The index adjusted for seasonal fluctuation dropped by 10 per cent in eight months. In the same period the Federal Reserve index of industrial production declined from 115 to 77; wholesale prices from 87.5 to 78.1; factory employment, adjusted for seasonal variation, dropped nearly 25 per cent; bank loans and investments declined by 1½ billion dollars, and demand deposits by about 1 billion. Other indexes showed correspondingly rapid declines.

This unprecedented decline occurred in the face of the most extensive and expensive organized efforts to prevent such a development that the world has ever seen. Not only in the United States, where the effort was most grandiose, but in the world at large, the conquest of the forces of depression had become the most important objective of public policy, except national defense. The principal possible exceptions to this statement are the four leading totalitarian countries—Russia, Germany, Italy, and Japan—and interestingly it is in precisely these countries where other objectives than the maintenance of employment and income have taken first place that the reaction of 1937-38 was least severe.

It is in the United States that the contrast between program and results was most striking, for it was here that the reaction showed itself earliest and was most severe, though it was here that the policy of government had been directed with the greatest vigor toward the restoration and maintenance of prosperity, and it was here that the largest claims had been made as to the success of governmental planning in bringing about recovery. "It was so," said the President, referring to the striking improvement in business activity in 1935-36, "because we planned it so."

In undertaking the difficult task of analyzing the causes of the reaction, we may best begin by eliminating certain explanations which either are suggested by observation of previous slumps or have been brought forward in connection with this one.

First, it is clear that this slump was not due to monetary stringency. Con-

sidering the enormous excess reserves of the banks, the low level of short-term interest rates, and the strong market for good bonds, this point need not be labored. To be sure, the reserve requirements of the banks had been increased twice in order to put the Federal reserve system in a better position to control a possible boom. But even immediately after these actions the margin of excess reserves was far greater than it ever was before 1932. Complaints of conservative lending policies on the part of the banks were heard, but certainly no more in 1937 than during the course of the preceding upswing of 1934-36. In this connection it is significant that the total amount of industrial loans applied for in 1936 was only at the twelve Federal Reserve Banks 36 million dollars.

Second, the slump was not due to overstraining of the capacity of industry, or a shortage of labor. Unemployment was still high, though in comparing the crude estimates which pass for statistics with the still cruder ones relating to previous depressions, allowance must be made for the fact that unemployment has been made more attractive than it ever was before. This has probably brought into the lists of the nominally unemployed thousands of persons who would not seek or would not be able to find steady employment, even in a period of high prosperity. There was still abundant railroad capacity, and there were no conspicuous bottlenecks in industry.

Third, there is no reason to believe that the slump was planned or deliberately promoted. The accusation that it was engineered to discredit the New Deal has no a priori plausibility, seeing that the slump did not occur during an election campaign, but in the first year of a presidential four-year term. This would certainly be an extraordinary time to engineer a slump in order to discredit the policies of the administration, if any one were so foolish as to use this method of influencing public opinion.

Moreover, the incentive, though doubtless it would be considered genuine, is insufficient. The basic objection of capitalists toward the New Deal rests on taxation policies and on the real or anticipated effects of New Deal policies on corporation profits. And this slump, like all previous ones, has cut into profits more than into any other form of income. It has not cut taxes nor is it likely to do so. To destroy profits without bringing any relief from taxation would be as fine an example of cutting off the nose to spite the face as could be imagined. Moreover, nothing, unless it was a war, could do more to bring about a further extension of government control than a recurrence of depression. A priori, in fact, it would be more plausible to expect a left-wing political party to stimulate a slump in order to discredit private enterprise, crystallize emergency measures into permanent policies, and hasten the coming of a more highly centralized and socialized industrial order. But I have no suspicion that anybody has been guilty of such tactics.

Fourth, I do not believe we can explain the slump adequately by any general lack of confidence in the future of investments in this country which

may have resulted from the egalitarianism or authoritarianism or the financial irresponsibility of the present government or its propensity to harass business. To the extent that these characterizations of the administration are sound, they were just as true in 1936-37 as they are in 1937-38. Businessmen and capitalists were certainly stunned by the results of the election of 1936, but private enterprise has enormous capacity of adapting itself to the conditions it has to work under. The boomlet of 1936-37, and also the current revival, are evidence of the willingness of business to maintain and expand operations under the revised rules, even though they do not like them.

Fifth, I see no evidence that the slump was due to our having caught up with any so-called arrearage of durable goods. Housing construction was still far behind what it would have been if we had had steady production from 1929 to 1935 at the average rate of the twenties, and such a comparison does not make allowance for the fact that obsolescence has been unusually high during the last few years. Whereas for many years previously no real improvement in housing had been introduced, the past six years have been marked by rapid development of both the supply and the demand for such conveniences as insulation and air-conditioning, built-in refrigerators, multiple baths, and recreation rooms. The demand for new housing has also been strengthened by the growing preference for suburban locations, resulting from the improvement of transportation.

The whole theory is rather preposterous anyway. Durable goods constitute the wealth of the country and of the individuals who make up the country, and to say that we have caught up with the demand for such goods is to say that the country is so wealthy that it prefers to hoard cash rather than to spend income or borrow for additional tangible wealth. Such a preference does seem to exist at times, but I do not believe that it is ever due to saturation of the want for durable goods, either consumption goods or capital goods. Consumers certainly do not have as many automobiles or as good houses as they would buy if they had the money or could borrow it with a prospect of being able to repay. As to capital goods in the narrower sense, the case is not quite so clear. Measured by the degree of utilization, the country appears to have had adequate productive capacity in most lines for a long time, although this was less true in 1937 when the slump started than in any other year since 1929.

The fact is that a slump always starts at the time when existing capacity is most fully utilized, and a recovery in investment has always started at the time when the existing overcapacity appeared to be most serious. This is a truism inherent in the very nature of the cycle. Some other cause for a change in business trend than the adequacy or inadequacy of capital equipment is necessary. Moreover, it must be remembered that a very large proportion of new capital construction is always of the type that is intended to reduce the cost of the individual concern rather than to increase its capacity. And de-

mand for capital for this purpose is insatiable until costs have been reduced to zero.

So much for the negative argument. Our next step must be to list other plausible reasons which cannot be waived aside in such summary fashion as the five just discussed, and see what they amount to. The ones that are worth examination seem to me to be the following: cessation of deficit financing; uncertainties generated by war scares; taxes, particularly the undistributed profits taxes and the high surtaxes; costs, especially labor conditions; and inventory conditions.

First as to the cessation of deficit financing: I shall not discuss this in detail because I do not think that it is logically a part of the problem, except in a negative way. If national income is prevented from declining only by the existence of a government deficit and does decline when government financing stops, the phenomenon to be explained is why the national income does not maintain itself without this artificial aid. To say that a slump ensues because the government stops putting excess income into circulation by deficit financing is like saying that the cause of a man's death is the lack of medicine. So long as the recipients of income and of amortization funds spend or reinvest these funds the national income does not decline, and the phenomenon which we are trying to explain is the widespread failure of such expenditure and reinvestment which presented the alternatives of either a declining national income or a continuation of deficit financing.

Let us consider next the war scare. The recovery of business activity in Europe since 1935 has almost everywhere had the character of an armament boom. This was true not only in the countries which have been carrying through stupendous plans of rearmament; it is also true of such countries as Sweden and the United States where domestic rearmament has been a minor factor, but exports have been stimulated by the armament booms of other countries. Considering the tremendous profits which neutrals made during the early years of the World War and the way in which productive activity has been stimulated in recent years by the war purchases of Germany, Japan, and Great Britain, it may seem anomalous to classify war scares as among the plausible causes of the depression. But the effects of war on economic activity are exceedingly complex, and successive stages in the development of international tensions and wars involve different effects on the economies, both of the participating countries and the prospective or actual neutrals.

In the earliest stages of the development of international strain, as the strain was manifested in the beginning of the rearmament program, the effect was clearly favorable to expenditure and income formation, both in the countries which participated in the movement and in those which did not. Likewise the early stages of actual large-scale military activity would probably be a powerful stimulus to activity in the neutral countries, and of

course in the warring countries also. But between these two stages there is a period of acute uncertainty in which businessmen do not know whether to plan for peace or for war. This stage was apparently reached in this country in the winter of 1937-38, when Europe passed beyond the stage of preparation for an indefinitely remote military emergency and had not reached the stage of actual military effort. There was a succession of serious war scares which culminated in a serious crisis in September, 1938. While the foreign demand for raw materials, scrap iron, and for munitions continued unabated, the more important domestic market for the construction of capital goods was depressed by the uncertainty. A European war would have been a stimulus to certain industries provided it was not effectively checked by neutrality legislation. The assurance of peace would have been a stimulus to other industries. But the uncertainty as to whether to plan for peace or for war could have no other effect than a postponement of plans for capital expansion until the future became clearer.

The importance of this depressing factor cannot be measured statistically; indeed it is somewhat hypothetical, but it seems to me that it must have been of major importance. This is confirmed by the response of the stock market and of industry to the clearing up, or postponement, of the issue at Munich.

A second possible depressing influence was the increasing pressure of taxation on corporate incomes and the higher individual incomes. The first effect of the tax on the undistributed profits of corporations enacted in the Revenue Act of 1936 was to bring about the distribution by a considerable number of industrial corporations of a greatly increased proportion of their earnings in the form of dividends. At first, naturally the increased dividends had a favorable effect on the stock market and through the stock market on the confidence of businessmen in the future. Theoretically it might have been expected also that it would facilitate long-term financing by creating a market in which corporations could raise capital by the issuance of common stocks. In fact, however, this revival of equity financing did not take place.

The theory of the undistributed profits tax is that if corporations have to obtain their capital by the sale of securities rather than the retention of undistributed surplus, the competition of the market should bring about an allocation of funds to the industries and concerns where the prospects are best, while at the same time the Treasury benefits by the increase in the large incomes that are subject to surtax. This is a sound enough principle; the difficulty in its application is that the surtaxes on the larger incomes are so extraordinarily heavy that a major part of the funds distributed as dividends are lost to the investment market through the operation of the surtax. Moreover, the very heavy taxation of large incomes, coupled with the absence of an adequate provision for carrying forward losses or averag-

ing incomes over a period of years, has largely destroyed the incentive for wealthy individuals to invest in enterprises involving any considerable degree of risk. A highly safe investment with a low yield has been made far more attractive than an investment which involves considerable prospective loss with a corresponding prospect of large gains. If the large gains are realized, the Treasury takes them; if the losses are realized they fall on the investor. Consequently, we have had a strong market for high-grade refunding bonds and a weak market for equity securities, especially those issued for purposes of expansion rather than for reducing costs in well-established profitable enterprises.

It is well known that the revival of 1935-37 centered to an extraordinary degree in the consumption goods industries. In fact the production of non-agricultural consumption goods probably was pretty well up to the capacity of the existing plant and equipment of those industries. The whole policy of the government with respect to wages, relief, housing, public works, and taxation tended to increase the proportion of income going to the lower third of the population. From the standpoint of the immediate effect on the standard of living and the immediate want-satisfying capacity of the country, this has been a gain. Correspondingly it is a loss from the standpoint of the future, if our reliance for progress is still to be placed on the formation of capital through individual saving. The extremely heavy surtax on large incomes would be unassailable, from the standpoint of the economic welfare of the population, if these large incomes were merely a means of enabling their recipients to indulge in luxury consumption. But these large incomes, along with the undistributed profits of corporations, have been the principal source of funds used to finance the steady increase in the productive capacity of the country. And this increase of productive wealth was an essential factor in the extraordinary rise in the real incomes of all classes of the population in the century following the close of the Napoleonic wars. As to consumed income, equality is extremely important; as to invested capital, the size of the total is much more important than the distribution of ownership. Invested capital works for everybody, not just for the owners. A poor man is about as well off riding on railroads owned by rich men as on one owned by poor men, and vastly better off than he is walking. What the government is doing, by heavy surtaxes, is diverting funds from potential investment through the Treasury into the consumption stream, without providing a substitute to replace them in the capital goods market, except for its own investments in public works, largely of a meagerly productive character.

Nevertheless I do not believe that this is an important factor explaining the slump of 1936-37. For one thing the contrast between conditions during the slump and conditions immediately preceding and following the slump was not great enough. The surtax rates were unchanged, and the

virtual abandonment of the program of undistributed profits taxation does not seem to fit in as an explanation of the timing of the slump and the recovery. Moreover, if this were a major factor it should have shown itself in a greater scarcity of investment funds and weaker stock markets than we had early in 1937 and late in 1938. It may help to explain, however, the apparent sensitiveness of the highgrade bond market to comparatively small sales of government bonds by banks concerning which I shall comment later.

The third factor was the rapid rise of the costs of industrial production. This was due, as Professor Hansen has pointed out in his recent book, *Full Recovery or Stagnation*, partly to governmental price policies beginning with the NRA, partly to corporate price policies, partly to labor policies, and in the case of residential construction to the high costs of borrowing. From the standpoint of manufacturing industry the cost of production breaks down chiefly into labor costs, taxes, and the prices of raw materials. Raw material prices have traditionally been sensitive prices, and tend to advance in periods of expanding industrial activity. In so far as such increases reflect the competitive bidding of industry under the influence of expanding volume and rising profits, they are not seriously restrictive. They constitute the normal process of redistribution of a rising total money income. Increasingly, however, in recent years, basic nonagricultural raw materials have fallen under monopolistic control, and some of these monopolies seem to overbid their hands, forcing up prices and holding down production whenever demand conditions begin to improve. And in the case of agricultural raw materials the absence of such monopolistic power has been compensated by the intrusion of direct governmental effort.

Still more important, in my judgment, so far as the downturn of 1937 was concerned, was the development of acute strains in the labor market. The rise of the C.I.O., the series of sit-down strikes in the winter of 1936-37, and the laxity of many local governments in the protection of property and of the right to work of nonparticipants in these disturbances, coupled with the obviously sympathetic attitude of the federal administration toward the labor side in all controversies, were highly discouraging to enterprise. The situation has been for eight years that we have had a disproportionately large number of people seeking the status of employed labor, and a disproportionate number of employed people seeking to become employers. This is what unemployment means; and it is perhaps the most obvious characteristic of a period of depression. In a boom period the opposite situation prevails—the employers' risks are regarded lightly, there is a high supply of entrepreneurship, and labor is relatively scarce. What in essence we have been doing under the New Deal is to try to remedy this relative shortage of entrepreneurship and overabundance of employee capacity by doing everything within the power of government to make the position of the

employee more attractive and that of the employer less attractive. This is true of taxation, as was just pointed out, it is true of the whole range of labor legislation, including the Social Security Act, the wage and hour legislation, the handling of the railroad issue, and so on through the list.

Adverse critics will doubtless advance a serious objection to this line of argument. How can labor costs be higher than the level of income justifies, since all these costs enter into the income which is available to buy the output of industry? Do not high wages create the purchasing power to buy the goods whose costs are raised by the high wages? For that matter, is not the same thing true of interest rates, of taxes, and of monopoly profits? If the recipients spend their incomes, effective purchasing power is equal to cost; if they do not spend their incomes, effective purchasing power is inadequate, no matter whether the level of costs is high or low.

Opponents of the purchasing power theory of high wages must admit, of course, that a high level of wages, if the wages are paid, provides the purchasing power to pay the prices that are necessary to cover the wage costs. This does not mean that rising wages contribute anything to recovery by providing purchasing power. For it is equally true that low wages provide the necessary income to cover the low costs. When wages are increased without any increase in productive efficiency, there are only two sources out of which they can come; first, normal profit, and second, the windfall profits of monetary expansion. Either way the new situation is certainly no more favorable to investment than the old one.

As was said before with regard to raw material prices, an increase of wages which results from competition of employers under the stimulus of rising volume and rising profits is merely a redistribution of rising total income between profit takers and laborers. It is generally assumed that such a redistribution is favorable to expansion because laborers spend their incomes more quickly than do entrepreneurs. This is not true in all stages of the business cycle, and even when it is true it is not the only relevant consideration. A shift from profits to wages may increase the propensity to consume and thus expand prospective markets, but it also reduces the incentive to take any risks in order to make the investment necessary to exploit that prospective market. Moreover, once a period of expansion is under way, a propensity to hoard ceases to prevail among people with large incomes, the velocity of turnover of their balances rises, and there is no longer any reason to assume that funds shifted from profit to wages will have a higher income velocity as a result.

The case we have to deal with, however, is not one of wages being drawn up by the increased value of labor to the employer, but being forced up by monopolistic pressure with governmental support. With a national income 15 per cent lower than in 1929, hourly wages in factories averaged 20 per cent higher than in 1929. Of this 20 per cent, 16 per cent is ac-

counted for by the increase of wages in the last quarter of 1936 and the first half of 1937. This rise was accentuated by a further rise of costs due to shorter hours, and to the strengthening of collective bargaining with its effect on working conditions and labor morale (defining morale, of course, from the employers' standpoint, not that of the union official or the seeker after labor votes). The rise in wages in 1936-37 had been paralleled only once before—that was in the summer of 1933. In both cases it was followed by a serious slump in productive activity. Was this a coincidence or a result? This brings us back to the purchasing power theory of high wages.

If we can conceive of a rise in wages that is paralleled by a corresponding rise in other forms of income, the change would clearly be neutral in its effect on the level of production. This is, of course, impossible. If it were paralleled by a similar rise in profits and in the labor incomes of individual entrepreneurs without a similar rise in fixed income of bondholders and landlords, it would be favorable to an expansion of production, at least in the short run, since it would transfer real income from the relatively inactive to the active productive fraction of the community. Any compensating depressive effect would be a long-run matter working through the effect on the volume of saving, and would presumably be offset in the short run by monetary expansion.

But here we have a forced increase in the share of the product going to a comparatively small fraction of the community; that is, laborers in industrial enterprises and transportation. These individuals make up a comparatively small fraction of the market for the products of industry. Though the total amount added to national income by the wage increases was equal to the total amount required to purchase the products of the factories, manufacturing industry could not rationally expect to recoup itself by advancing the prices of its products to cover the added wage costs and leave the total profit margin unimpaired.¹ The case is like the effect of an expansion of loans on the deposits of banks. A general expansion of loans will generate a corresponding amount of deposits in the whole system, but an expansion by a few banks will not generate a corresponding expansion in the deposits of those banks. A forced rise of wages, or of any other cost item, in a fraction of the total economy generates purchasing power, of which a large part will be spread over the rest of the economy with a corresponding diminution of the profits of the industries which have to pay the increased costs. And it happened in this case that the cost increase was concentrated in that fraction of the economy in which the volume of output is most sensitive to profit prospects. If a similar thing had happened in agriculture or in retail distribution, we might have hoped that entrepreneurs would continue productive activity unslackened with the own-

¹ For an elaboration of this point see Spurgeon Bell, *Wages, Productivity and Social Progress*, Chap. III, The Brookings Institution, in preparation.

ers absorbing the loss out of their personal incomes so long as their resources held out. These are industries in which the volume of production is inelastic, the prices of entrepreneurs' services elastic. But manufacturing industry, especially that fraction of manufacture which caters to the capital goods industry, is characterized by elasticity of production. The added burden of costs which was thrown upon it in the winter of 1936-37 was too great to be absorbed in the hope that after a series of repercussions the added volume of purchasing power would generate corresponding expansions in other sectors of industry, and thereby validate itself. The immediate outcome was determined by the anticipations of entrepreneurs and investors, but economic analysis affords no basis for saying that these anticipations were not rational.

Finally as to inventory conditions. My first thought was to ignore this item on the ground that the expansion or contraction of inventories is a part of the phenomenon which we are trying to explain, rather than an explanation. This would be correct if the inventory slump had consisted merely in the liquidation of stocks that had not been subject to cyclical overexpansion. When we consider, however, the magnitude of the expansion of inventories which appears to have occurred in 1936 and the first half of 1937, estimated at the unprecedented figure of 5 billion dollars, we are justified, I think, in saying that during the upswing period inventories had been built up so far beyond the normal needs of business that correction of the position of itself involved a sizable setback in productive activity. Had the inventories been accumulated merely on the basis of an expanding volume of business activity their liquidation would explain nothing—we would still have to inquire why the anticipated volume of productive activity did not materialize. But the expansion was based in large part on the abnormal factors which have already been discussed; that is, price advances and anticipated price advances due to the war scare and particularly to the condition of the labor market. With the cessation of the acute pressure for higher labor costs the price incentive to maintain these expanded inventories fizzled out, and the correction of the speculative inventory position must have been an important factor in determining the magnitude of the slump.

While I was writing this paper my attention was called to Professor Hansen's new book, *Full Recovery or Stagnation*. Professor Hansen's treatment of the subject is more mature than anything I could hope to do with the time at my disposal for the preparation of this paper; it seems to me to be one of the very best things which has been done on the whole subject of business fluctuations. There are two points, however, in regard to which it seems worth while to register a dissent. The first of these points is Professor Hansen's suggestion that the unloading of bonds by banks, consequent on an expansion of demand for commercial loans, operates, or oper-

ated in this case, as a check on business expansion. Though very small in volume, this unloading had some tendency to raise bond yields and tighten the capital market and thus made the financing of expansion more difficult. In this connection he makes an interesting comment (page 272): "A vast governmental deficit financed by a banking system renders it peculiarly difficult for private investment to expand in the amount required for full employment." As a business expansion opens up alternative employments for bank funds, banks unload their governments and bond prices fall. There is danger that the interest rate will rise more rapidly than is justified by the economic situation. We were caught in a dilemma. The more private investment expands, the greater the demand on bank credit; banks unload government obligations; there develops a scramble to sell long-term bonds and the disturbed condition of the bond market makes private financing difficult. Thus, to quote: "Deficit financing through long-term bonds, in so far as such bonds are held by the banks, imposes a limit on the expansion of private investment beyond a fairly moderate amount." Two criticisms suggest themselves.

First, a decline in the price of high-grade securities and a rise in interest rates is to be expected in the course of business recovery, just as we expect a rise in wages and other costs. In this case, as would be expected, the prices of United States government securities were among the first to turn downward. High-grade rails turned downward before second-grade, and bonds in general turned downward before stocks. The very high prices of the safest types of security, from which the decline occurred, reflected the pressure of money seeking the safest type of investment which is characteristic of the depression psychology. If recovery cannot take place in the face of some decline in the prices that investors will pay for safe investments during a severe depression, clearly there never can be recovery under the operation of the motivations that are characteristic of a system of private enterprise. The recession is not to be explained by a slight recession of bond prices—the phenomenon to be explained is the inability of private enterprise to survive such a trifling shock as the sale of 175 million dollars of bonds out of bank holdings of more than fifty times that amount.

Second, and perhaps more important, the objection to the filling up of bank portfolios with government bonds during a depression applies just as much to their being filled up with anything else. Suppose instead of government bonds the banks had been loaded up with stock market call loans. According to time-honored theory, when the demand for commercial and industrial loans expands, the banks withdraw from the stock market; stock prices are unfavorably affected, and the disturbance of the security market makes private financing difficult. If the banks were filled up with consumer paper the situation would be similar. Pressure to liquidate in order to accommodate business would curtail consumers' buying power,

with a resultant tendency to choke off the expansion. I do not see how we can avoid this sort of dilemma except either by having the banks hold a large unused lending capacity in the form of excess reserves—and certainly they had that in 1937 far more than in any previous expansion movement—or else by depending on the unutilized capacity of the Federal Reserve Banks to finance the expansion. That is what central banks are for. But certainly there was no credit pinch in 1937 which could be attributed to scarcity of Federal reserve credit or stinginess in dispensing it.

The fact is that in past recoveries we have never depended primarily on bank expansion to finance capital expansion. Banks have been the intermediaries financing underwriting and the turnover of old securities, but not the chief source or principal secondary source of capital. The thing to be explained in this case is why the capital of private investors was not forthcoming; why such a slight liquidation of bonds on the part of banks produced so pronounced an effect on the bond market. For an explanation I think we have to look to the dissipation of corporation surplus, the shrinkage of large incomes which afford room for savings, and the fact that our taxation policy is adverse to the functioning of the investor—much more adverse than it is to the functioning of the corporation executive.

My second disagreement is with Professor Hansen's analysis of the difference between the reactions which may be expected to follow a consumption boom and an investment boom. He stresses the fact that in this last recovery, unlike previous ones, the stimulus came from the side of consumption, stimulated by governmental policies which culminated in the soldiers' bonus of 1936. He argues that such investment as took place was closely geared to consumption, so that when consumption fell off, investment followed more promptly than if it had been directed to a more distant future. While he has serious reservations as to the importance of the acceleration principle in general, he seems to believe that in the case of an investment boom which is geared closely to consumption, any reaction in consumption is especially likely to lead to a greater reaction in investment, along the lines of the acceleration theory.

This point does not seem to me to be well taken. To say that the expansion in investment is geared closely to an expansion in consumption means, I presume, that the expansion in investment was primarily in the accumulation in the stock of consumer goods and of raw materials and half-finished products, rather than in the building of machines to make machines, facilities for transportation, power equipment, and so on, which looked to the satisfaction of consumers' demand only in the fairly remote future. Now, it is true that an expansion of investment which is geared closely to the expansion of consumer demand arising from an outside factor may be expected to react more promptly to a downturn of consumption than would an investment boom of the familiar type—more promptly, but not more

vigorously. If the expansion of investment is in goods that are close to the consumer rather than in facilities to make facilities to produce unspecified consumer goods in the distant future, the acceleration principle has less opportunity to operate on the upswing and the reaction should be correspondingly less violent on the downswing. The phenomenon to be explained here is a downswing of unprecedented violence. I do not believe that the consumption character of the expansion interpreted along the lines of the acceleration principle is of any help in explaining it.

FISCAL POLICY IN THE BUSINESS CYCLE

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Underbalancing the budget during a depression is not primarily a deliberate policy but a practical necessity. I would venture the statement that, with few exceptions, a budget never is, and never has been balanced in a depression. Depression, in modern society, causes a fall in all sorts of public income—rates of taxation remaining the same—and at the same time a rise in the bulk of public expenditure, especially for social purposes, standards of welfare policy remaining unchanged. The traditional, conservative reaction of the fiscal system to these influences by business on the budget is, as we all know, to raise the public income by increasing the rates of taxation, and at the same time to reduce expenditures as far as possible by lowering the standards of public activity. If the depression is at all serious, these measures for trying to make the two ends meet will, however, not suffice. The budget will not be balanced in the strict theoretical sense. That does not mean, however, that the budget cannot be presented as properly balanced. In fact, a very large part of the intricate art of budgetary technique in all countries was, and is even now, directed toward that task. And much of the irrational complexity of our budgetary systems is due to these attempts to present balanced budgets even when they are not balanced. Any budget has ample possibilities of concealed deficits in all its corners: hidden reserves which can be mobilized, incomes which can be accounted to an earlier year, costs which can be formally postponed without implying a real saving (e.g., payments due to pension funds and the like). It is this play with fictitious economies, branched out into all items of the budget to conceal an actual deficit from the general public and sometimes, also, from the legislators, which makes an economist feel so hopeless in dealing with budgetary matters. The same damage to clarity and rationality in budgeting is presented by the corresponding attempts in good times to conceal an actual overbalancing of the budget by strengthening it in all its corners—which is also part of traditional "sound" budgetary policy.

The depression following the crisis of 1929 turned out to be so serious that even in the most respectable fiscal households the deficits could not be concealed by budgetary tricks of the traditional type. Furthermore, during this depression an almost world-wide deliberate fiscal deficit policy, motivated by the effects of the budget on the business situation, has been proposed and to some extent put in effect.

In most countries, including Sweden (which has served as the laboratory in working out certain of the conclusions which I shall present at a later stage of this paper), this policy was carried out only half-heartedly. Public

works were generally begun too late; they were not prepared in advance and were, for this reason, delayed and scarcely aimed at the works which should have been selected before all others if a rational choice had been made. They were also usually of much smaller scope than would have been desirable. In countries where the state ordinarily carries on large productive enterprises it turned out to be quite difficult to induce the management of these public enterprises not to conform with the general business trend, but to increase public investment when private investment was shrinking. No country, so far as I know, has dared to carry out the expansionist policy even on the income side of the budget by actually decreasing taxation. On the contrary, taxation was generally raised, even such taxation on consumption and business as was certain to have deflationary effects. Monetary policy and trade policy were very often not regulated to conform to the expansionist objects of financial policy. But in spite of these and other shortcomings, a new fiscal policy has been inaugurated by which the old concealed-sin deficit budgeting during depressions not only achieved much greater magnitude, but was publicly confessed and actually turned into a virtue.

I will not stop to discuss the economic theory in back of this new expansionist fiscal policy, but only to make a few remarks in passing. It seems to me that very often this theory has been oversimplified by contrasting borrowing with taxation, thus neglecting a detailed discussion of the very different varieties of taxation. There are, however, taxes having effects more comparable to borrowing than to other kinds of taxes. Even on the expenditure side, a more detailed discussion of the different effects of various expenditures is called for instead of the broad statements commonly utilized in monetary theory. I would like further to point out that the question which has been so much discussed, particularly in this country, whether deficit spending has self-perpetuating effects and whether it, therefore, can be utilized as a start which then can be safely discontinued, has a very different impact depending upon whether the general trend of production and national income is unbroken as it is for instance in Sweden, or broken as in America; i.e., if we are dealing with a depression in the sense of a temporary setback or with a prolonged stagnation.

Business stagnation points to specific maladjustments in the structure of the economy and, therefore, calls for perhaps radical changes in the whole institutional framework of that economy. To my mind, it is an understatement detrimental to this much larger adjustment problem when this problem is dealt with in the euphemistic terms of business cycle policy. We are then apt to try to substitute symptomatic cures for the needed prophylactic treatment. The most that can be asked from fiscal policy in such a situation is that it procures the necessary breathing space for reforms attacking the deeper causes of maladjustment. The effect of deficit spending on the in-

crease in private investment will naturally be much weakened if not reversed during a stagnation in which business confidence in the future is at a low point. Or to state it more specifically: If we are dealing with a predominantly capitalistic economy like America, where, in addition, public economic activity is by tradition very narrowly restricted, and public spending in profitable investment particularly limited; if, furthermore, that economy is experiencing an economic stagnation with business fluctuating around a trend of production reaching only two-thirds or perhaps one-half of its potential capacity; if, in such a situation, deficit spending, frustrated and driven into the very narrow channels remaining open to it, is utilized to uphold national consumption (and production) but the more fundamental causes of maladjustment are mainly left unattacked; then we should not be surprised if a decrease of public spending is immediately followed by a new downward turn.

In the following I am postulating that the trend of economic development is unbroken and that depressions are only temporary setbacks in a rising trend of production and national income. This assumption means that my conclusions are not directly applicable to the present situation in America. They will, however, have full bearing on the fiscal system set up as a standard to be realized within a better balanced economic development.

Without going further into the theory of business cycle policy, which is being dealt with at this meeting by other speakers, I take it for granted in the following argument that the general economic reasons for deficit spending during depressions are admittedly good. In addition to the common monetary argument of increasing total demand, there are also important, purely fiscal reasons for concentrating public expenditure in the years when costs are low, and for keeping tax rates at least constant if not decreasing them during depression years.

As I pointed out, the actual realization of this new fiscal policy showed serious shortcomings. In Sweden—where the depression turned into a revival as early as 1933 and where, since 1935, we have had a real boom bringing industrial production 50 per cent higher than the peak in 1929, which, in its turn, was 50 per cent above the peak of 1920—we have, during the last years, been reshaping our fiscal policy in order to avoid these shortcomings the next time. Part of this fiscal preparation for crisis has been to take precautions in order to avoid delay in setting the spending program in motion. An intensive inventory of possible public works in the field of public buildings, road construction, and municipal investments has thus been prepared. A general program for social housing has been worked out in some detail. The state production enterprises—railroads, power plants, post office system, mines, forest preserves, etc.—are urged to prepare yearly building programs for ten years in advance. They are asked

to have available at all times technical and economic plans, ready for speedy action. The idea is that next crisis we shall not be caught unawares. The blueprints shall be at hand, the measures shall be decided upon in advance, and the government shall have only to press the button to set the machinery in motion. Meantime, state investment, which had already been planned and decided upon, was stopped during the boom period.

This aspect of the economic planning problem is certainly of the greatest importance. In this paper I am, however, passing it over to devote my main discussion to the reconstruction of the budget system. The shortcomings of the new fiscal policy as it has been tested out in various countries during the last depression are, to a considerable extent, to be explained by the fact that this policy was frustrated as a result of being pressed upon a budgetary system which had been built on principles contradictory to this selfsame policy. It is, therefore, just at present an important problem of economic engineering to construct a new scheme of legal and institutional regulations for the fiscal households: a set of fiscal formulas which at the same time guarantees to a satisfactory degree the "soundness" of public finances in the long run and allows enough flexibility from year to year for fiscal policy to serve its purpose among other measures to mitigate the fluctuations in business activity.

I must here desist from any attempt to discuss the concept of "soundness" of a fiscal system. So much must be said that there is nothing in the fiscal reality corresponding to a conception of absolute financial soundness with the implication that one fiscal system is "sound" and another "unsound." This notion can only be defined in relation to a particular fiscal household, and even then only in a relative sense. We have to make clear what we consider to be assets in a particular fiscal household. The trend of the net aggregate value of these assets minus public debts is, then, the measure of the relative soundness of a fiscal system; if this trend is lowered, the finances are somewhat less sound, and vice versa. The degree of soundness to be kept up in a system of public finances being the basic principle of fiscal policy, it must be established by a political decision. For stability in the system it is of the utmost importance that this principle be fixed and not changed in the short run as a concession to expediency.

It befits an enlightened democracy not only to make this fundamental decision explicit and to stick to it, but to base it not upon abstract stereotypes of definitions and the meaning of the terms, but upon an economic analysis in rational terms of the effects of a choice of one or another degree of soundness: effects on the trend of total capital formation, on income distribution, on the development during future periods of the tension between necessary taxation on the one hand, and possible expenditures on the other hand, and, last but not least, the effects on public confidence.

I want further to stress at the outset that soundness of public finance is

a matter of the development in the long run. In principle there cannot exist any contradiction between the two postulated desiderata. Any degree of financial soundness in the long run is compatible with any amount of flexibility of the fiscal policy from year to year.

One of the obvious shortcomings of deficit spending during the last depression was, however, the adverse reaction of business confidence, which has too often restricted or even possibly reversed its stimulating effects. In itself it might seem astonishing that business is apt to react in this way. In a depression with falling demand, decreasing production, and increasing unemployment, there is temporarily a harmony of interests in society. Farmers, workers, businessmen—all should be interested in keeping up incomes, purchasing power, demand, production, and prices.

If business, and public opinion more broadly, is afraid of a deficit spending program it must be because people fear a less sound trend of financial development in the long run. Could we, therefore, make some sort of arrangement giving guarantees for a corresponding overbalancing of the budgets in good times, the public confidence should be satisfied.

That would mean that the budget reaction to changes in business activity should be built on a fixed pattern, regulating deficits and surpluses in budget balancing. It must be admitted that the general public is quite right in feeling its confidence disturbed by rapid, unregularized changes within the field of budget policy, or, to state it in another way, by a fiscal policy which is not integrated and regularized into a system of long-range budget planning, but instead constitutes a break with acknowledged budgetary principles. We must, therefore, not only make a virtue of the sins but also incorporate them in the regular fiscal system in order to avoid the adverse confidence reaction.

The chief technical problem of fiscal policy in the business cycle is, therefore, to design formulas for public finance which, as part of the regular system, make room for deficit spending during depressions by securing the building up of corresponding surpluses in good years.

When insisting on the construction of a more rigid pattern of budget reaction to the business cycle of this sort, my argument is, however, not only the interest of realizing the chosen degree of soundness in public finances and the interest of preserving public confidence in the fiscal system. My conclusion from our practical experiences in Sweden, and from what I know of experiences gathered in other countries, is also that fiscal policy is rather a clumsy instrument in crisis policy when utilized as the mobile factor in fighting against depressive forces which change from month to month and from week to week. The most we can righteously request from fiscal policy is that it shall in a general and rather rigid way be adjusted to react contrary to the cyclical movements; it is certainly not a good instrument for taking care of the more individualized and concrete troubles of the day or the month. Other means must be found for dealing with them. But this

day-to-day policy, broadly monetary policy, will have its way paved if the fiscal policy is built into a strong counter-cycle movement.

Finally, only by integrating the fiscal policy during depressions into a long-range scheme will it be possible to give deficit spending the magnitude actually indicated in the situation. I mentioned that, at least in countries where the Great Depression did not develop into a prolonged stagnation as in this country, the actual deficits have been very small when compared with brave theories—this is at least true of Sweden—and that in no country, as far as I know, has the courage been strong enough to induce a lowering of deflationary taxation; instead tax levies have usually been increased. This is all because the new policy is still in conflict with the basic principles of the budget system. Only by organizing it into a permanent budget system will a more courageous fiscal policy during depressions be possible.

The idea behind such a financial system, in which the budget reaction towards business fluctuations is diverted into a new pattern, more compatible with the desires of business cycle policy, must be not only to take away the irrational inducements to be too parsimonious during depression years, but also to make the budget situation seem difficult in boom years. Deficit spending must be accounted in such a way that it mortgages the otherwise ample resources of good years. The deficits ought, therefore, to be made ostentatiously visible, and a technique must be invented by which the deficits are carried forward until they are liquidated.

That is, of course, the big problem: how to tie the hands of governments and legislators in good times and hinder them from expansion beyond the trend at that time, but to be able to release their hands and spur them to action in depressions. If we want public finance to react as a counter-cycle, we must change the political psychology and give the state plenty of resources in depressions, but hold them back in booms. Such a change in psychology can be carried out by appropriate alterations in the institutional setup. We must, in financial as well as in monetary matters, try to come back to a reasonable degree of automatic reactions. But we must build up these automatic reactions so that they are better adapted to the needs of present-day society. It is not contradictory to ask the legislative body to create for itself, by enacting appropriate rules, new conditions for its own functioning. It is in fact a primitive democracy where the representation does not regularize its own action. The budget system in every country is such a more permanent regulation of the yearly fiscal action. The request is merely to change rules already existing into rules better adapted to their purpose.

After this very general discussion of the problems to be solved, I will continue with a very short description of the new Swedish budgetary system. I hope thus to avoid being too abstract and vague. Among the special conditions prevailing in Sweden at least two ought to be mentioned as of

importance to the question of the applicability elsewhere of our new budget technique: after the severe depression Sweden enjoyed a real boom; this unbroken trend of economic development which gives us the right to deal with depressions as temporary setbacks also made it possible for us to redeem rapidly the extraordinary borrowing of the depression years. This, of course, was a more important factor in turning public confidence to modern rational budget principles than whole libraries of books.

We accepted as a start the time-honored idea that the formula for the soundness of public finance should even in future be to preserve intact the present net value of the state's income earning assets, over and above national debt.

We have even accepted—with certain adjustments to be discussed immediately—the equally time-honored financing principle that only profitable, self-liquidating investments could ordinarily be financed out of loans. This financing principle demarcates the capital investment budget. We now completely separated this capital investment budget from the running budget. In order to make this distinction clear we said that these two budgets should not hereafter be added together to make total budget sums. There is, indeed, no rational reason for adding together these two budgets; a private entrepreneur or an individual family household would never think of adding together its corresponding accounts.

The running budget contains, on the one hand, receipts from taxation, the yearly profits from productive state enterprises and other yearly state incomes, and, on the other side of the ledger, all sorts of ordinary expenditures which are not of the investment type, plus the writing off of the "productive" investment. The capital investment budget, on the other hand, is regularly financed by borrowed money—in so far as free capital out of sinking funds in the different "productive enterprises" is not available; i.e., in so far as the state is increasing investment over normal reinvestment.

The existence of a separate capital investment budget means, in itself, a considerable amount of regularized flexibility of fiscal policy within the business cycle. On the one hand, the state is free during depressions to expand its investments under this capital investment budget without increasing taxation at the same time. On the other hand, the yearly subtractions from the net profits earned by these investments for payments to the sinking funds mean the carrying out of an exact long-time balance. As the payments to sinking funds are made automatically and according to technical considerations, this long-time balancing is ordinarily to be considered well guaranteed. There has never been any doubt as to the permissibility of financing profitable investment in railroads, power plants, public utilities, etc., by loans. Financing them by taxation would rather have been considered an unnecessary burdening of the taxpayer.

It is obvious that the greater the proportion of a nation's productive and

investment activity carried on in this way, directly by the state, the greater is the flexibility of fiscal policy in the business cycle and the more powerful is fiscal policy as a means of business cycle policy. The chief practical difficulty is that the managers of state enterprises are apt to react very much as managers of private enterprises. The management of state railroads, for example, is naturally most interested in investment when traffic is increasing and actually creating new needs. But the managers of the state enterprises ought to be more easily educated, and, in the last instance, they are under political control, which private investment is not.

Every enlargement of the scope of the capital investment budget will increase fiscal flexibility in the business cycle. With regard to the "soundness" of the financial system in the long run, there is, in theory, absolutely no difference if expenditures are carried over from the running budget to the capital investment budget, provided only that due provisions for sinking funds are established. For many reasons, and especially in view of making the budget principles understandable to the public, which always regards the budget as analogous to private bookkeeping—that this analogy is false does not matter—it seems advisable, however, to keep to the old convention that borrowing is only permissible to finance "productive," self-liquidating investments. But a number of expenditures can easily be made self-liquidating.

Thus, a public corporation, placed on the same level as the other productive enterprises of the state, was instituted to own and administer the state's public buildings, schools, post offices, hospitals, etc. The particular branch of administration has, thus, to pay to this corporation yearly rent for the use of its quarters. This rent is, of course, a yearly and ordinary expenditure on the running budget charged that particular branch of administration. The corporation, in its turn, utilizes its rent incomes for paying not only the upkeep of the buildings, but also interest and depreciation on the invested capital. The payment to the sinking fund is a matter of business routine and follows technical rules. This reform carries with it the added advantage of making the relative costs of different branches of public activity measurable and comparable with much more rationality and accuracy than was possible earlier when the various administrations were charged in the running budget with the costs of new buildings in the year, and only in the year, in which they happened to be built. In the present problem the reform means a greater flexibility in fiscal policy, because during a depression we can now expand our construction program for public buildings and finance it out of loans without breaking any budget principles and without endangering the soundness of finances in the long run. The burden on the running budget is thus automatically kept upon the same level even for the years when the building program is shrinking.

In the same way we are gradually transferring the social housing pro-

gram to this capital investment budget in which yearly balancing is not a problem, and in which the long-run balancing of incomes and expenditures is automatically guaranteed by the technical depreciation rules. The state, through another state business corporation, makes loans on strictly business terms to communities and local nonprofit-making corporations and finances those loans from the capital investment budget. The very substantial housing subsidies from the state are kept distinctly separate; they are given in the form of yearly contributions from the running budget to the various local projects.

Nothing stands in the way of transferring the financing of the entire upkeep and construction of roads to another state business corporation. The taxes on automobile traffic are even now reserved for this purpose; these taxes, of course, flow most abundantly during boom years while the building work ought to be concentrated in the depression years. A better timing of investment would, however, be possible by turning over these automobile taxes to a corporation as a regular and guaranteed source of income. If it had these regular incomes this corporation would be able to finance the investment expenditures for new roads building from the capital investment budget. A technically appropriate amount of its yearly income has then to be paid into sinking funds for the depreciation of road capital.

But even with such important changes in the scope of the capital investment budget—which is the best form for an automatic budget structure securing long-range balancing while preserving flexibility from year to year—this capital investment budget will nevertheless be comparatively small. There is, therefore, need for still more flexibility. The method utilized in Sweden during the earlier depression was the usual one: first to conceal the deficit by exhausting certain funds and later when that was no longer possible, to single out certain large items from the ordinary budget—all sorts of unemployment relief, public works of “unproductive” character, and agricultural subsidies—and finance them not out of taxes but by loans. We had, in other words, an emergency budget.

This method is, however, far from ideal. It is irregular; it breaks the budget principles and the budget unity. It further opens the door for certain very irrational influences upon fiscal policy. The minister of finance will, in spite of the extraordinary borrowing for the emergency items, find himself compelled to be most economical on the remainder of the running budget, at the same time as he must take pride in spending on the particular items selected for the extraordinary loan financing. He will further be hindered from decreasing deflationary taxation.

As the distinction between running budget and capital investment budget must be kept fixed and cannot be changed for temporary reasons of expediency, the rational solution must be to give up the old principle that the budget shall be balanced yearly and to make it a rule that the yearly budget

shall be closed by a deficit or a surplus. During a depression a general deficit on the running budget should be allowed as part of the budgetary scheme. But it is then necessary to find the technical guarantees of subsequent overbalancing when the depression is over.

To create this guarantee it is stipulated that a deficit on the running budget shall never disappear from the budget before it is again made good. The deficit is transferred as a negative item to a special budget equalization fund which represents the continuity in public finances. This fund is made self-liquidating by the rule that one year's deficit shall be debited to the ordinary budgets during the next five years by one-fifth each year, that rule providing a maximum amortization term and, of course, not preventing the state from paying off the deficit in a shorter period. There is nothing to hinder a budget deficit during two or more subsequent years, but then the amortization to be paid to the equalization fund piles up. A budget surplus is not allowed to appear on the running budget before all deficits are paid.

In the last instance the guarantee of "sound finances" sought in this budgetary system is the openness with which a deficit is registered, and the institution of the equalization fund by which the deficits are carried forward until they are paid. It is, of course, part of the plan that the budget shall be worked out with scrupulous honesty and that all the customary tricks in traditional budgetary technique shall be forsaken.

This budgetary system makes it possible in the next depression to carry out a much bolder expansionist program without breaking the established budgetary principles. Large increases in investments in the state productive enterprises, in public buildings, in social housing and in roads can be carried out on the capital investment budget and in the ordinary way be financed by loans. The number of "unproductive" public works can also be increased on the running budget, and, which is still more important, there is no need to curtail ordinary expenditures, for the running budget is not supposed to be balanced at such a time. There is, then, for the same reasons, no need to raise taxes; but on the contrary, taxes, or particular varieties of taxes, considered to have deflationary effects may be lowered as part of the depression policy. The burden on the equalization fund will then be progressively increased. In the following boom a revised policy will be enacted by the principles instigated in this institution.

The ordinary maximum height of the equalization fund in a boom is fixed at only about 75 million kronor, which actually means that the normal height over a period of years will be very much under zero. Of course, in the Swedish financial situation in which the state has a capital wealth much in excess of the total national debt, there should have been no difficulty at all in starting the new system by creating a considerable positive fund. When we have, on the contrary, chosen to work with underbalances

from bad years to be repaid during good years as the normal course of events, we have followed the pattern of the last depression. We have thought this to be more advantageous, as there is then no limit to the underbalancing during bad years. If we had constituted a positive fund it is to be expected that it would perhaps be exhausted in the very bottom of a depression, and that a further underbalancing could then (because of that), in a sensitive moment, create bad confidence reactions. It seemed better, therefore, to make a negative fund the normal thing right from the beginning. We thought, also, that the necessity of the repayment of accumulated deficits would be a stronger force toward consolidation during good years than merely the desirability of again building a fund which had been exhausted.

It may be asked: how shall it be ascertained that there is a depression and that a deficit is to be permitted? We have not correlated the working of the system to any specific index of employment or production. On the whole it is not very difficult to know when there is a depression, especially as Sweden obviously reacts to international crisis with a certain time lag. It is, of course, a harder test of economic knowledge and financial character to acknowledge that there is a revival and, therefore, when measures should be taken to strengthen the budget. It is actually in order to build up the character and courage of administrators that the use of the budget system is proposed to correct the accumulated sins of concealed deficits.

Finally, the point might be raised against this structure of fiscal reaction to various fluctuations, that it assumes normal business cycles with good times alternating the bad ones. It may be maintained that the system does not work if the trend should be broken into an economic stagnation interrupted by very short and weak revivals. The answer is that no financial system, and no political system, will long sustain such a development. Economic stagnation calls for perhaps radical changes of the whole institutional structure of an economy, including, of course, its fiscal system, but this reform cannot be carried out simply by fiscal policy. The budgetary system does, however, not exclude underbalancing for any number of years. The only effect will be that the deficits on the ordinary budget will then cumulate into huge sums.

AN APPRAISAL OF THE WORKABILITY OF COMPENSATORY DEVICES

By J. M. CLARK
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I have been told that no talk should include more than three ideas. Since the topic assigned me inevitably involves a larger number, it seems well to indicate at the start the points I shall stress the most. They lie in the field of expansion via deficit spending. The first point is that deficit spending can produce an industrial expansion, probably larger than itself, but tending to dwindle rapidly and disappear if the deficit spending stops. The second is that it is highly improbable that this form of stimulus can itself serve to initiate a revival that will endure after the stimulus is removed. And the third is that indefinite deficit spending is not an enduringly workable remedy for chronic, partial stagnation of an economic system like our own. I shall return to these points after dealing more briefly with other kinds of compensatory devices than deficit spending.

A preliminary question is: For what kinds of disturbances or dislocations are the measures aimed to compensate? It seems necessary to distinguish: (1) short cycles, (2) longer and more severe movements, and (3) a possible chronic state of partial stagnation which might be described as an underemployment-equilibrium, though not excluding cyclical fluctuations, (4) connected with these conditions, and especially with the third, secular changes in economic balance such as that resulting from a declining rate of growth of population or, possibly, of requirements for industrial capital. These distinctions will be kept in mind in the subsequent discussion of different compensatory devices.

I. Credit Controls

About credit controls I shall say little, deferring to those who are more expert. In general, they appear suitable to deal with the shorter cyclical movements. Also, since they have more power to restrain than to stimulate, they are appropriate to that theory which holds that the cause of depression is the preceding boom, and that the way to limit the depression is to restrict the boom. Further, if this type of policy succeeded in its immediate aim, its direct effect would seem to be an averaging of the rate of activity in booms and depressions, rather than a leveling-up to full-capacity rates of operation. If this were accomplished, there might then be a further long-run tendency to bring unused resources into use and so gradually to level the rate of activity upward; but this is a debatable point, and the policy itself would seem to have no positive and direct effect in that direction.

If control were comprehensive, extending to all forms of credit, it

could limit industrial expansion; but our existing machinery is not comprehensive to the necessary extent, and it seems to be unable wholly to stop "bootleg credit," as was illustrated in the stockmarket boom of 1929. It appears that for the purpose there is need of some qualitative control of the uses to which credit is put, and distinctions between different forms of credit do not at present seem a sufficient means of controlling the uses. Credit may be put to other uses than its form would naturally indicate. Consumer credit would need to be included in the system of control. And even granting comprehensive control, easy credit terms are not enough to make people use funds if prospective profits are a minus quantity. They can have some stimulative effect under favorable conditions, but they cannot of themselves bring the favorable conditions to pass, and their stimulative effect is limited. Credit control cannot by itself be expected to iron out major fluctuations by regularizing investment, and especially not to regularize it upward.

II. *Taxed Money*

Of systems of taxed money I am tempted not to speak at all, especially as they will be discussed later. As to the comprehensive system suggested by Mr. Dahlberg, I am impressed by the amazing complexity and ramifications of the equipment of controls he finds necessary. Considering that any such new project of control regularly finds in practice that there are many additions necessary to stop up unforeseen gaps, one wonders what this system would grow into in application, if even the preliminary project is so complicated.

As to the form recently voted down in California, I am puzzled by the problem of the negative rate of interest implied in the present worth of a credit instrument yielding \$100 at the end of a year and requiring weekly outlays amounting to more than \$100 before the date of redemption. It also seems clear that the projected expansion of the flow of the circulating medium had no relation at all to any estimate of unused productive capacity which must be brought into use to supply the increase in real wealth which would be necessary if the money distribution were to produce any economic benefits. Further comment would perhaps be hardly useful. In any plans of this class, the uncertainties appear to baffle any attempt to predict results, including the uncertainty as to what the plan would turn into after it had failed to work precisely as first intended.

III. *Unemployment Insurance As a Means of Regularizing Consumers' Buying Power*

There is, of course, plenty of justification for this policy apart from its possible effect as a compensatory device. Considered solely from the latter standpoint, it is clearly suited to short cycles. In longer and larger move-

ments, the "insurance" feature would presumably break down, and the system would become simply one form of deficit spending. In so far as it acts as insurance, benefits during depressions would be financed by the use of the accumulated reserves, in one way or another. But the liquidity of these reserves is a real problem; and it appears that for the purpose in hand this liquidity would be largely fictitious. Securities should not be dumped in large quantities on the markets at the times when large payments have to be made, these being precisely the times when the markets are least able to absorb them. Moreover, these are just the times when the credit policy will point toward open-market purchases of public securities, rather than sales. Thus it seems that the reserves may more appropriately be used as collateral for borrowing. This consideration appears to strengthen the case for the proposition that reserves of the present type and amount are not called for in this variety of insurance. This question deserves serious consideration, together with the question whether a pay roll tax is the most rational method of stimulating employment.

How much effect can such a system have in stabilizing consumers' purchasing power? It seems hardly necessary to argue that it could not bring about complete stabilization, nor anything near it. The difficulties of financing such a burden are only too obvious. And it is also only too obvious that it is not practicable to guarantee workers, when they are not working, an income equal to what they earn when they are fully employed in a prosperous state of industry. This would mean that they would be guaranteed, for not working, more income per week than industry could possibly afford them when it is depressed and can offer only part-time employment. If the first movements of industry toward revival are not to be squelched, it must be possible for industry to hire workers who are receiving unemployment benefits, giving them something considerably short of full-time employment, and still affording them earnings which are larger than the unemployment benefits they have been receiving. In the nature of the case, the benefits cannot represent what we regard as a satisfactory "American standard of living." By benefits so limited, the shrinkage of purchasing power can be reduced, and depressions mitigated, but the major part of the problem will remain.

There is the further possibility of enabling individual industries or individual employers to secure lower premium rates by improving their unemployment record. This is sound in principle, but raises the question how much the individual industry or employer may be able to do in this direction. So far as the benefits cover seasonal unemployment, they are dealing with something which the individual employer can sometimes do a good deal to reduce, especially if cyclical fluctuations are absent or are not too severe. But cyclical fluctuations, except for minor and fairly regular ones, are too large and too uncertain for the individual employer to do much about by his own individual policy. And if they are violent, they carry with them

a disruption of many kinds of schemes of seasonal stabilization.¹ This appears to have happened during the Great Depression. Here again, the possibilities of stabilization via unemployment insurance appear decidedly limited.

IV. Increased Wages As a Means of Increasing Consumers' Purchasing Power

First, we may assume that prices are raised enough to reimburse producers for increased wage outlays. This would not need to include at first any allowance for increased costs of inventory already on hand. The first effect would presumably be a temporary boom like that of the summer of 1933, occurring during the interval after the program was determined on and before it went into effect and due to producers stocking up in anticipation of increased costs and prices. Afterward, as the abnormally increased stocks were worked off, there would naturally be a reaction. If in the meantime nothing had happened to rouse expectations that some degree of revival would endure, the reaction would naturally carry the rate of activity as much below the initial rate as the boom had carried it above. However, while this was occurring, there would be another effect, arising from the fact that the initial increase in prices would not have to be as great as the increase of wage costs, due to the use of inventories bought or produced at earlier and lower prices or costs. This would lead to an increase in consumers' real purchasing power, which would tend to dwindle away as the old inventories were worked off, but would not be followed by a decline below previous levels. The total effect would be a compound of these two elements, plus the intangible element of business confidence. Whether any increase would be left after six months would depend on this intangible element.

In the second place, let us assume that prices are not raised by the full amount of increased wage costs, though some increases would presumably be necessary. In other words, let us assume the conditions contemplated by the early policy pronouncements of the NRA. Here the effects already considered would appear in diminished degree, together with an enduring increase in real wage disbursements, at the expense of profit margins per unit of sales. The net effect would depend on the relative magnitude, and also the timing, of the increase in purchases responding to the increased real-wage disbursements and any offsetting decreases resulting from the decreased profit margins per unit of sales. If both wages and profits were spent completely and with equal promptness, the two would offset one another. But since wages are disbursed and spent ahead of profits, there would naturally be a temporary stimulus to physical output, though since the total

¹ On these points I am indebted to a study by Dr. Eli Ginzberg, of Columbia University, which is shortly to appear in book form.

increase in consumers' spendings comes out of previous increases in wage-cost disbursements, it is hard to see how any increase in physical volume, from such a source, could bring a revival of profits. And the ultimate outcome would depend mainly on the effect on capital outlays.

We may fairly assume that at the time the program is initiated, capital outlays have been less than depreciation for some time and capital equipment has deteriorated. If the shrinkage in demand has not been too severe, and especially if confidence in natural recovery has not disappeared, there are likely to be capital outlays which would soon be made if wages were not increased. An increase in the rate of physical output, taken by itself, might tend to speed them up.² But taken in connection with a reduced profit ratio and increased prices of capital goods, the net effect seems more likely to be a decrease in capital outlays below what they would have been if wages had not been increased. This is likely to outweigh the rather thin margin of increase in the wage earners' real spending power, and thus to have a retarding rather than a stimulating effect on recovery.

In 1933, however, the situation was different. There were then vast excesses of productive capacity, relative to the inordinately-shrunken demand, and there was little faith in natural recovery. Under these conditions there was little prospect of early revival of capital outlays if wages were undisturbed. In short, there was probably little to lose on the side of capital outlays, in the immediate future. In fact, one kind of capital outlay, namely, inventories, is closely enough related to current rate of output so that it might respond to this factor, even if profit margins were declining. Thus, in such a special situation, the net effect of wage increases might be stimulative to the rate of physical output at the bottom of a depression. Even here, however, if revival is to go very far, prospective earnings must be sufficient to justify capital outlays beyond the bare minimum which is virtually necessary if the current rate of output is to be handled at all.

It should perhaps not be necessary to note that the mere fact that wages have been raised does not tell us enough to enable us to predict the results at all definitely. The real question is whether they have been raised above what some workers are worth to an employer (in which case unemployment will result). As to rates of profit, the crucial question is the hope of early return to fairly normal levels.

Here, as in the first case, increased prices of capital goods are likely to prove a handicap to the revival of capital outlays. In the capital goods industries the way to recovery would seem to lie in reduced prices rather than in increased wage-cost disbursements. Other difficulties might be mentioned, perhaps especially the dilemma of sectional wage differentials in which the government necessarily becomes embroiled, and of which we have not heard the last.

² Cf. Kuznets, "Relation Between Capital Goods and Finished Products in the Business Cycle," *Essays in Honor of Wesley Clair Mitchell*, pp. 209-67.

To sum up, when conditions are as bad as they were in early 1933, increased wages may initiate the first steps of a revival, but the effect is likely to be soon spent unless other forces take up the burden and if other forces are to take up the burden, wage increases must not be carried too far. If they are carried too far they may effectually prevent anything more than a feeble and tentative revival.

V. Limitation of Hours, to Spread Work

This is hardly a means of stabilizing economic activity, but rather, in the main, a means of distributing the burden of unemployment. If combined with increased wage rates, it becomes a means of distributing the benefit of the increased wage rates so that instead of the same number of workers making increased weekly earnings, a larger number make the same weekly earnings as before. Any effect which the shortening of hours in a depression may have on total physical output is dependent on a balancing of factors too subtle to be assessed theoretically, and probably too obscure to be isolated statistically.

The chief danger is perhaps that of neglecting the distinction between a work-sharing standard of hours and a true optimum working week, which would be longer. The optimum may be taken as the length of working week needed to produce all the output that is worth producing, and work sharing, as a shorter week used to spread out a smaller amount of employment, at a time when we are unable for commercial reasons to produce up to the economic optimum. There is real danger that standards of hours of the work-sharing sort may persist into more normal times, when they will act to limit production to an undesirable extent. Even if the industrial system as a whole does not reach full capacity operation, such limitations of hours are likely to create bottlenecks which will limit total production.

It may perhaps be contended that our capacity to produce increases faster than we know how to assimilate the increase without experiencing the phenomenon spoken of as "overproduction," and lapsing into a depression; and that it is therefore desirable to prevent our productive power from growing too fast, even if this means stopping short of our inherent optimum capacity. This, however, is a doubtful point, and amounts to a confession of defeat which we are, I take it, not yet ready to make. Unless it is established as true, we may fairly assume that it is undesirable to do anything to set artificial limits on our power to produce.

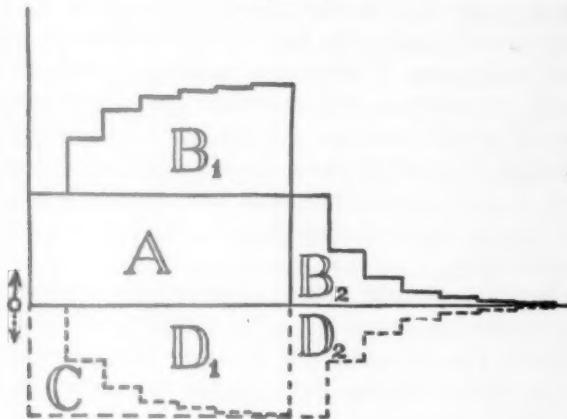
VI. Anticyclical Deficit Spending Intended to be Offset by Surplus Financing during Subsequent Prosperity

This is commonly spoken of as "pump-priming," but it seems that there is need to distinguish two types of possible effects, only one of which really deserves the name of pump-priming. First, such spending may be a stimulus to production, which may be self-multiplying to some extent but not

to any significant extent self-perpetuating. In this aspect it may be useful to tide over a depression until other forces initiate a self-sustaining revival. The much discussed "multiplier theory" implies this kind of an effect; and, strictly construed, it implies nothing more.

Secondly, there is the theory of pump-priming, properly so-called, if one may legitimately build a theory out of the implications of such a term. These implications include the idea that deficit spending can itself start

CHART I



SIMPLIFIED MULTIPLIER DIAGRAM*

Vertical dimensions: dollar magnitudes. Horizontal dimension: time.

Area A = public deficit spending.

" B₁ = multiplier effect.

" B₂ = dwindling aftereffects.

" C + D₁ = public borrowing.

Areas, D₁, D₂ = deflationary uses of increased income.

* This chart is suggestive only. It is too neat and simple to represent accurately any probable facts, but exhibits to the eye (with no claims to accuracy) certain quantities which probably exist, and certain interrelations deserving investigation, to see if their existence is corroborated by the facts.

a revival of such a sort that it can go on under its own power after the stimulus of deficit financing has been removed. This distinction seems important.

It is my present view that the multiplier theory contains a significant truth (though some formulations need considerable qualification) but that the pump-priming theory, as I have defined it, requires a combination of favorable conditions which are not likely to be found in practice. Our own experience in the Great Depression seems to indicate the power of deficit spending to produce a stimulus, probably greater than itself, and tending to stop when the deficit spending stops or shortly thereafter. But there seems to be no clear indication of enduring effects of the true pump-priming

sort. We seem in danger of being committed to continued deficit financing in order to avoid an economic relapse. Let us examine the multiplier theory.

In the first place, its application is not confined to public spending. For the purpose in hand, private capital outlays are deficit spending, and carry all the stimulative effects without some of the drawbacks which apply to public deficit spending. My own first consideration of this theory was as an explanation of the expansion phase of a normal business cycle, and had nothing to do with public stimulative spending. It was not concerned to explain cumulative increase so much as why it reaches a limit.⁸ In the second place, the multiplier works downward as well as upward, and presumably at about the same rate. This is shown in the accompanying chart, representing orthodox multiplier theory in highly mechanical and simplified form. Vertical dimensions represent money quantities and horizontal dimensions represent time. The area A represents public stimulative spendings, continued for a long enough time—presumably more than one year—to allow practically the full "multiplier" effect to come into being. The area B_1 represents this multiplier effect (assuming constant "leakages" of $1/2$ and a multiplier of 2), and the area B_2 represents the dwindling aftereffects which continue after the public spending has stopped. They proceed on a downward curve which exactly reverses the upward curve of the multiplier. This represents what might be expected from a sudden stoppage of the public outlays, unless some stimulus from another source had occurred in the meantime. The recession of 1937-38 has by some been attributed, partly at least, to this kind of an effect, and the provision that the present public works program must be substantially completed by June 30, 1940, would appear calculated to produce what is from this standpoint precisely the wrong effect, when this deadline is reached.

This suggests the need of gradual tapering off of public spending. And this seems clearly desirable. But an examination of the geometry of the diagram will show that no mere tapering off will avoid a shrinkage of the total flow of income and spending. It may be mitigated if the leakages decline, and the multiplier correspondingly increases as the revival proceeds (and to some extent this is likely to happen). Or it may be counteracted if in the meantime some private investment spending comes into being, of a sort which is not closely tied to the current rate of consumer spending, and continues unabated after the tapering off of public spending begins. True pump-priming would seem to depend on the development of this kind of private investment. Let us look, then, at the effects of public deficit spending on private investment, this being the crucial factor from the standpoint of enduring effects. As Dr. Copeland has pointed out, public investment has not been able, with all the efforts we have made, to fill the

⁸This occurred about 1930, when Mr. R. F. Kahn must have been working out his formulation, first published in 1931.

gap created by shortage of private investment. A free flow of private investment remains a prime requisite of successful policy.

First, as to inventories. These apparently tend to follow the current rate of output fairly closely, increasing when it increases and decreasing when it decreases, being affected secondarily by the general state of business confidence. Thus the effect of changes in the amount of inventories would be to supplement and intensify the effect of the multiplier, both upward and downward, especially at times when the curve is rising or falling quite rapidly. No important enduring pump-priming effect is to be expected from this source.

The demand for durable capital equipment is affected by the obsolescence of existing units; and this is compounded with the effect of increasing demand for the final product, which may reduce or eliminate the amount of existing excess capacity of standard quality and efficiency. Equipment may be good enough to use for standby purposes or on a part-time basis, while if an increase of demand brought it into use for a larger percentage of the time, it would pay to replace or modernize it. Hence the demand for durable equipment does not remain at zero until all the existing excess capacity is in use, and then start up suddenly: it begins to rise with any significant increase in the demand for the product it manufactures. Thus public deficit spending, by increasing the demand for consumers goods, would naturally cause some increase in the demand for durable capital equipment; and this increase would come fairly promptly, without waiting for all the existing excess capacity to be called into use.

This effect would be complicated, however, by the effect of the policy on businessmen's expectations as to future demand and especially future net earnings. If they expect the pump to be primed successfully, they will be readier to make long-term investments, and that fact will of itself tend to bring the expectation to pass. But if, on the contrary, they reckon that the current increase in demand for products is due to a temporary stimulus from public spending, and will disappear when this support is removed, this fact will make them slower to make long-term investments, except such as are physically necessary to meet the existing demand. Expectations of this sort will also tend to make themselves come true, and to cause the revival to be of a type which does depend on continuance of the governmental stimulus.

And if businessmen expect the public deficit spending to continue for a long time and in large volume, they will be affected by fear of ultimate impaired public credit, or of "inflation," or if not these, then at least by fear of burdensome taxes in the future. These are all retarding forces. The form of taxes will also have an effect, especially the question whether the system is so arranged that credits due to losses will or will not offset extra taxes due to high earnings. The present system is felt to have the quality

of "heads I win, tails you lose," and this affects particularly the more speculative forms of investment. Recently a businessman, presented with opportunities of a speculative sort which would ordinarily appear as good risks, has said: "If we lose, we lose. And if we win, the government will get most of it. I guess we won't go into it." The revival since 1933 appears to have been marked by this kind of conservatism in private investment and to have been correspondingly limited.

One danger which has sometimes been mentioned is that of a progressive absorption of loanable funds, which if it did not lead to inflation might lead to a scarcity of funds for private borrowers when they did come into the market, thus tending to check revival. It has also been noted that this danger does not seem to have materialized in our recent experience. And on the whole it does not seem inherently likely to materialize; as may be illustrated by examining a neglected factor in the multiplier theory itself. The leakages which are responsible for the failure of the multiplier to go on expanding indefinitely themselves represent deflationary uses of income received from the public spendings, and these must, at least in a general way, tend to offset the inflationary effect of the public borrowings. They may not all come directly into the banks as loanable funds, but if they do not do that, they strengthen someone's credit position and thereby are likely to reduce the need of borrowing from the banks in the future.

Returning to the chart, the public borrowings and the deflationary effect of the leakages have been represented in dotted lines below the zero line. For simplicity, the deflationary uses of funds have been shown as offsets to the public borrowings, even though this may be subject to considerable qualification, since they may not all come into the same sectors of the credit market. Thus the rectangle C plus D_1 represents the total public borrowing, equal to the deficit spending. The area D_1 represents the deflationary uses of the resulting incomes, and the remaining area, C , may be taken (with qualifications already noted) as representing the net inflationary effect on the economic system as a whole. This is a finite quantity equal (in this figure) to twice the amount of deficit spending in one of the periods into which the figure is divided (and which represent the average time required for increased private income to lead to increased spending). So far as this representation can be taken as correct, this is the limit of the net absorption of credit (or of net inflation) for the whole economic system. The area D_2 represents the deflationary uses of what is left of the increased income after the public spending stops. It offsets the net absorption of credit, and leaves the system in an unexpanded state.

There has, however, been an important shift in credit relations. On the assumptions already made, the government owes more money and private individuals less. Whether this is beneficial or not I will not attempt to discuss. And whether this last bit of analysis is justified or not, the fact

remains that there is nothing self-limiting about the debt the government is piling up. It goes on increasing without limit. It does not represent a net burden of this amount on the economic system as a whole, but it does represent an obligation on Americans as taxpayers to transfer ever increasing sums to Americans as bondholders; and this can easily reach a point at which it will retard business activity materially; while even before that point is reached, the expectation of it can have a similar retarding effect.

Another retarding effect could occur in case the public spending program is so handled as to result in pegging the prices of construction and construction materials against a decline which might have proved attractive to private investors. Another can occur wherever the public investment which is being made enters into competition with private investment. Where this is the case, one dollar of public capital expenditure can easily scare away several dollars of private capital outlays. Dr. Copeland has shown that the amount of such competitive public investment has been very small, relative to the total; but the amount of private investment it has served to prevent may have been considerably larger.

One possibility seems particularly disquieting; namely, that the total deficit burden may reach a point at which it is doing more to hold business back than the current spending is doing to stimulate it, and still it may be true that the immediate effect of more spending will be a (temporary) stimulus, and the immediate effect of stopping will be a recession. When the total public debt has grown to threatening proportions, current additions will not quickly lift it to a new order of magnitude, and therefore may not make much immediate difference to the apprehensions which constitute the chief discouraging effect of the situation, while the immediate stimulative effect of further public outlays remains. Such a situation, if it comes about, would be almost exactly like that of the victim of a habit forming drug. The parallel is closer than one likes to contemplate.

Various other problems might be briefly mentioned. Sound and justified spending projects cannot be improvised, but must be planned and scrutinized long ahead. The planning which has been done since 1933 has accomplished much, but it probably remains true that public works cannot be gotten under way in large volume promptly enough to check the decline in a depression. Nor is it easy to taper them off promptly when the need for a stimulus decreases. If politically controlled, they are too tempting to those who could use them as political trading stamps or political bribes. And our experience has shown that it is easier for an administration to start Congress on this route than to stop it when it seems to have gone far enough. Our political shortcomings make it extraordinarily difficult for us to use such an anticyclical timing program with the necessary combination of skill, integrity, and backbone. Under these conditions, the fact that we

have learned that deficit spending can really stimulate business may be one of the most dangerous results of the depression.

VII. Chronic Depression and Continued Deficit Spending

Most of the possible causes of chronic depression seem to act through a lack of disposition or capacity to spend the full amount of our national income as it is under conditions of reasonably full capacity operation. One way of expressing this is to say that under such conditions there is a tendency for savings out of income from immediate past production to exceed investment in the purchase of the products of current production. For this purpose, savings out of revaluation-income and investment in such things as securities already outstanding should be excluded. The effects of a declining rate of growth of population and of a possible declining rate of expansion of capital requirements register through this basic balance or unbalance.

Regardless of whether such an unbalanced tendency has existed in the past, it may exist in the future. The Brookings study has found it true of the post-War prosperity period; and while the figures are probably inconclusive, and the theory is to that extent unproved, one should be careful not to draw from this the unwarranted conclusion that it has been disproved.⁴ The theory has also been criticized on the ground that, if it were true, there should have been a chronic depression during the twenties, instead of an unprecedented burst of prosperity. This criticism is worth examination, but seems on the whole unwarranted. Instead, it seems that, through the action of the investment markets, a discrepancy of the sort we are discussing could easily result in a temporary boom, leading to an ultimate reversal. Let us examine this possibility for a moment.

We may assume that four billion dollars flow into the securities markets seeking investment, while only three billions flow out through the issuance of new securities for the purchase of capital equipment. The natural result is a rise in the prices of outstanding securities. Some of the profits would be taken out to be spent for consumption and some would be reinvested, tending to a continued rise. If this were all, the process would presumably go on until one billion dollars had been taken out for consumption expenditures, after which prices and economic activity would be stabilized. And in the meantime, possibly five billions might have been added to the total market value of securities outstanding.

But this is not all, since people buy stocks on margins, and credit funds as well as savings flow into the markets, thus adding to the original one billion of excess funds seeking investment. Then prices of securities may

⁴The Brookings study does not make the exclusions from savings which I have indicated above.

not be stabilized until two or three billions instead of one billion have been taken out and used for consumption. In that case, an excess of savings would have been converted into an excess of spendings, and production, instead of being depressed or stabilized, would be stimulated. In the meantime, the prices of securities would have been raised to an irrationally high level in terms of prospective earnings, and this process would somewhere reach its limit, after which the whole structure would collapse. At this point I may take refuge in my rôle as a theorist, and leave it to the students of economic behavior whether this picture bears sufficient resemblance to the facts of the post-War boom and collapse to indicate the probability that it describes a significant causal element.

Immediate future conditions are different. With a market psychology not calculated to sustain a boom, and with margin trading limited by increased margin requirements, the same cause, if it operates, is perhaps more likely to result in chronic depression, possibly temporarily mitigated or neutralized by a more modest stock-market expansion. And this suggests the interesting theoretical query whether controls of the securities markets could be made so delicate as to have, at least temporarily, a neutralizing effect, if that were desired. Into that question I will not go.

If the basic tendency I am discussing exists, public deficit spending can be an offset, but not forever, and not in sufficient volume to neutralize any very large shortage of private investment; that is, not without disastrous consequences, defeating the end in view. We have not reached the limit of our debt-bearing power, but we do seem to have reached a point at which the piling up of public deficits is a deterrent to private capital outlays, and probably to a larger extent than further public spending can safely undertake to neutralize. Private investment has not vanished, but it has not fully recovered, especially investments involving considerable risk and looking to a long future. Fears of future deficits and exorbitant taxes awake easily and make revival an unduly sensitive plant. We can stand this for awhile more—preferably with some assurance that the treasury is not to be treated as a bottomless grab bag for pressure-group interests—and provided we are meanwhile making progress toward more enduring adjustments.

The problem might be formulated as one of stimulating investment, or limiting savings (and increasing consumer spendings) or both, the stimulative method being inherently the more promising. We might stimulate investment by methods which would increase profits and also increase savings; and we might limit savings by methods which would drastically reduce inequalities of income and also cripple the flow of investment. If they involved ill-judged increases of wages, they might thereby reduce the volume of employment. Neither of these is a solution, though the second is more clearly destructive than the first. What is needed is adequate incentive to invest, without such large rewards as would bring about a top-heavy scale

of income distribution such as might result from high profits, or even from what business now regards as moderate profits on a rapidly increasing per capita investment (which is one of the postulates of our problem). Low interest rates are clearly indicated, but there is fairly wide agreement that this alone is not sufficient.

Wages should be as high as possible without actually reducing employment, and some added distribution of consumer-income out of public funds will probably be a necessity for some time to come, including assisted low-cost housing. Collective bargaining should increase. But business should not be given occasion to fear that government is fastening upon it a protected monopoly, more powerful and burdensome than any "capitalistic" monopoly; namely, a monopoly of organized labor. If grounds for such fears exist, they should be removed.

As to profits, after the lean years we have been through, capital will probably be content to invest on more moderate returns than prevailed before 1929; and it is my belief that it must do so if our system is to avoid shipwreck. But some prospective return is required. Taxes can without undue ill effects take enough to reduce materially the investor's remaining margin, but they must not treat gains and losses so unequally that risk-taking is penalized and turned into a virtual certainty of loss. Public utility capital will be forthcoming in adequate volume for lower returns than it has enjoyed in the past, if it knows what to expect—as at present it does not.⁵ One thing which might lend important aid would be a reduction of the spread in costs between high-cost and low-cost producers, in order that business might be attractive to investors without the necessity of offering the low-cost producers unnecessarily high rewards, in order that the higher-cost producers may have enough to live on.

On the side of savings, the effects of the social security system on private savings should be studied, as well as the question of revising downwards the existing provisions for reserves, now financed out of pay roll taxes directly burdening the act of employing labor. We have here a powerful instrument for modifying the balance between saving and investment, if deliberately used with that purpose in mind. A tax system capable of raising large revenues from clear net income, without laying heavy burdens on small and smallish incomes, would be another powerful instrument in the right direction. At present, large volumes of tax-exempt securities seem to be an obstacle to a rational system.

Am I proposing a policy based on a stagnation theory which I have stated is unproved? I submit that, regardless of the truth or falsity of any such theory, the general measures I have suggested deserve to be either carried out or searchingly studied. If there is no truth in the stagnation theory, we

⁵ Since the above was written the agreement of the TVA to purchase utility properties has reduced this uncertainty, but not wholly removed it.

could select from the proposed program simply those features favorable to liberal profits and optimistic business expectations, and be assured of the release of a flow of dammed up private investment greater than any deficit spending we could afford. The resulting recovery would, of course, end in another depression. And a more balanced policy has the better chances in the long run. In the meantime, we badly need statistics which may furnish better measures of savings, investment, and, so far as possible, potential investment.

To conclude, there is no simple formula, or set of formulas, guaranteed to cure all the irregularities and shortcomings of the system of private enterprise. If we are to keep the system at all, we must expect to put up with a good many of these shortcomings, including some business fluctuations. On the other hand, the operation of the system can be improved, and the fluctuations mitigated, by intelligent action. And it goes without saying that we shall be dissatisfied so long as there are serious shortages of employment, and that we shall be irresistibly moved to tinker with the system. Such tinkering is dangerous; granted. If crudely and impatiently done, we may very easily find that we have, without wishing it, tinkered the system out of existence. But doing nothing is dangerous, too. We live in dangerous times. What may reasonably be asked is that, when we tinker, we shall do it with a solemn sense of responsibility and with the utmost foresight humanly possible as to the consequences and their dangers.

DIVERGENCIES IN THE DEVELOPMENT OF RECOVERY IN VARIOUS COUNTRIES

CHESTER A. PHILLIPS, *Chairman*

The topics discussed by the participants of this round table were: "Recovery Policies in Democratic Countries," by Gottfried Haberler; "Recovery Policies in Totalitarian States," by George N. Halm; "Divergencies in the Development of Recovery in Various Countries," by Josef Herbert Furth; "Recovery in Japan," by Elizabeth Boody Schumpeter; "Is There a World-Wide Drift towards Regimented Control of Industry," by Emil Lederer. Condensed statements follow.

GOTTFRIED HABERLER: In one respect it is easier to report on democratic than on totalitarian countries. It is much easier to find out about democratic countries than dictatorships. Statistical material and interpretations are much more plentiful. In fact we suffer from *embarras de richesse* rather than from *embarras de rareté* as in the totalitarian countries.

In other respects it is more difficult to give an adequate picture of recovery policies in democratic countries because of the greater divergencies among different countries and because of the lack of continuity through time in some of them. There is, for instance, a great difference in recovery policy as well as in the actual course of recovery between such countries as Finland or Sweden on the one hand and France on the other; between England and the United States; and between Switzerland, Holland, and the British dominions. Even within groups which are from an economic and political point of view pretty homogeneous we sometimes find different types of recovery policy, e.g., Sweden and Denmark or Holland and Belgium. Even between Finland and Sweden significant differences between the policies can be found.

Hence it is a question whether we can speak at all of common features which differentiate recovery policy in all democratic countries as compared with totalitarian countries.

The comparison of economic achievements in the two groups of countries leads to very different results according to the criteria which we adopt for measuring the success of recovery effort.

If we measure the degree of recovery achieved by the decrease in unemployment, real and apparent, the comparison is on the whole to the disadvantage of the democratic countries. There can be no doubt that at least the most prominent and most powerful of the totalitarian countries, namely, Germany, has been able to deal with the unemployment problem much more effectively than England, the United States, France, or even than most of the small neutral countries, such as Switzerland and Holland.

If we take volume of production as a whole as measure, the difference in success is not so great. There are some democratic countries, such as Great Britain or Sweden, which have experienced an increase in production since the depth of the depression almost as great as Germany.

The comparison is still less to the advantage of the totalitarian countries if we take volume of consumption as a criterion, at least if we define consumption as excluding armament. The scale is probably turned in favor of democratic coun-

tries, if we take as a criterion economic welfare, i.e., the amount of leisure enjoyed by the working people, the extent of freedom of choice left to the consumer, the absence of regimentation, etc.

On the other hand, if we take the degree of economic stability into consideration, the comparison again is more in favor of totalitarian countries. At least the recent slump which affected the United States and England, spreading from these to the whole democratic group and other countries, has not made itself felt in Germany.

It goes without saying that whichever of the various criteria is adopted the comparison on the democratic side is made very difficult by differences in the degree of recovery. As everybody knows, countries like Sweden, Finland, and Belgium have been much more successful than the United States; whilst England, Switzerland, and Holland occupy an intermediate position.

In order to form a judgment about the efficiency of different types of recovery measures, it would be necessary to distinguish between the difficulties confronting different countries. There can be no doubt that there exist great differences of the sort which make an objective comparison of the degree of recovery an unsafe measure for the efficiency of the recovery policy pursued.

If we want to give a general characterization of recovery policy in democratic countries as a whole as compared with totalitarian countries as a whole, it must be mainly in negative terms. We can say that in democratic countries the degree of interference by the governments in economic matters has been less intensive than in the totalitarian countries. This is due to a number of circumstances. First, the democratic organization of government makes it less efficient and slower in adopting measures of economic regulation than dictatorships, even if the objectives are the same. Secondly, there is a clear difference in objectives. Democratic countries have been loath or, rather, less inclined to restrict the freedom of consumers' choice. They display greater aversion to regimentation. Thirdly, the recovery policy in different democratic countries has been influenced in varying degree by the enlightened economists, conservative as well as more radical.

With regard to measures of monetary expansion, it is hard to find a difference, except one in degree—and that sometimes slight—between democratic and totalitarian countries. Probably it can be said that democratic countries have been in a better position in respect to these measures than the totalitarian countries. They have had more gold; they have been to a greater extent free from the recollection of recent inflation, which in the case of Germany made measures of economic expansion very difficult.

In international trade democratic countries have, on the whole, imposed fewer and less drastic restrictions than totalitarian countries. With the exception of the United States, the general trend everywhere is in the direction of increased protectionism.

Great differences between recovery policies in democratic and totalitarian countries exist in respect to labor policy and the control of money costs in general. Whilst in the totalitarian countries a rise in wages and prices has been prevented and quite consciously a policy of "quantity boom" as against a "price boom" has been pursued, in the democratic countries money wages and money prices have tended to rise as soon as the level of employment began to increase; or else,

under the influence of a primitive "purchasing power theory," wages and prices were deliberately raised in the hope that this rise would stimulate production. In the labor market the totalitarian countries have been entirely able to prevent strikes, lockouts, and other friction, which have played a great rôle in some of the democratic countries, notably in the United States and France. In the totalitarian countries the mobility of labor has been increased and the working week lengthened, whilst in France and the United States just the opposite has taken place. In Germany we can distinguish two stages. First, wage rates have been kept down (not earnings or pay rolls) in order to aid recovery. In a later phase of the German boom, wages have been kept down because the state wanted to confiscate and to reserve an ever increasing part of the national income for its own purposes. If we compare the policies in the democratic countries with the totalitarian countries, the comparison obviously can be only with the first stage just mentioned.

If we confine ourselves to the recovery aspect of the matter, there can be no doubt in my mind that the handicap and disadvantage of the democratic countries which explains the conspicuous failure of recovery policies in some of them, notably in France and to a lesser extent in the United States, is connected to a large extent with the premature rise in money costs, the rise in money wages and prices. If an economic recovery, as soon as it starts, leads to a rise in prices, it is easy to see that it cannot go on very far. Such a rise in prices tends to become cumulative and one of two things will happen: either the monetary authorities will try to stop a threatening inflation—then the recovery will be interrupted—or else the rise in prices will not be checked, and it will tend to become progressive; and it is clear that it cannot go on very far.

Here the totalitarian countries are now in a much better position. They keep down money costs and since there is an insatiable demand for commodities in general, due to their huge armament expenditures, etc., production is kept up. Hence under a totalitarian economic policy as developed by Germany it is easier to approach full employment and to stay there.

There is another difficulty which totalitarian countries are in a better position to overcome; namely, the appearance of bottlenecks in the productive processes. Such bottlenecks in totalitarian countries are either broken down by measures designed to increase mobility of workers and compulsory transfer of labor or else these bottlenecks are avoided by what they call *Konsumlenkung* or regulation of consumption. Both types of measures are difficult to apply under democratic organization of government. In addition to that, the totalitarian countries have evolved an arsenal of measures designed to combat threatening inflation: measures of stimulating, sterilizing, and canalizing savings, creaming off profits, etc.

It is impossible here to discuss exhaustively the problem of how under democratic rule of government, without drastic regimentation and without abandoning freedom of consumers' choice, it is possible to approach full employment and to keep the economic system at a level of fairly high employment. Probably it is impossible to approach full employment as closely under democratic conditions as under the autarchy of the totalitarian states. It should, however, be feasible to avoid the danger of a premature price boom, which threatens to lead to inflation, by controlling money wages and prices and by more specific measures designed to eliminate or avoid bottlenecks. In that respect the democratic countries could cer-

tainly take a leaf from the policies devised in totalitarian countries, without abandoning the fundamental principles or their economic and political organization.

GEORGE N. HALM: The aim of Germany's recovery policy in 1933-34 was to initiate and revive private enterprise through public spending, and not to stimulate government interference of the sort which would eventually lead to a central plan. State initiative and government interference were supposed to taper off as soon as private initiative could guarantee full employment. This initial ignition program turned out to be a failure and today we have a completely regulated and controlled economy in Germany.

Germany's policy cannot be explained in terms of the "multiplier" only. It was too inflation-conscious; the spark did not ignite; the impact of the spending program was too weak.

Specifically, the following facts may be suggested: (1) Germany's wage policy is a low-wage policy, possible to that extent only in a totalitarian country; (2) the government, eager to get immediate results, puts much weight on direct primary employment, thus reducing artificially indirect primary employment and its stimulating effects on private industry; (3) lacking secondary employment due to leakages in the pump-priming process such as debt repayments, new savings, depletion of stocks, and to excess capacity in producers and consumers goods industries; (4) the reaction of the private entrepreneur was unfavorable; he was afraid of the left wing of the N.S.D.A.P. which declared that the recovery policy, far from leading back into the free exchange economy, was a transitory concession to capitalist forces, soon to be supplanted by a planned economy.

Thus the government was forced to carry on. But the ideology had changed also. It seemed inconsistent with the idea of the totalitarian state to leave the economy alone. The government had learned to like primary employment which could be used for the fulfillment of its own pretentious aims, the more, the less secondary employment was induced. The rearmament program came just in time. Otherwise other big investment programs would have taken its place. It is incorrect to consider the armament program only as a temporary interruption of Germany's way back to the free exchange economy.

According to totalitarian *Weltanschauung* the advantages of a totalitarian (i.e., a planned) economy are much too important to be sacrificed for increased individual freedom. These advantages are: (1) security of occupation without the danger of inflation; (2) the abundance of investment opportunities, which no longer depend on private decisions as to consumption and investment; (3) the employment of many direct means of controlling the economic process and of integrating, co-ordinating, and timing the different measures; (4) the concentration of the available means of production on public tasks on a nation-wide scale, which works are, superficially, most impressive.

As to the planned character of the totalitarian economy we must not be deceived by superficial similarities. There are prices but they are artificial prices (fixed wages, fixed exchange rates, fixed interest rates); they no longer fulfill the function of allocating the means of production to the wishes of the consumer. Therefore they have to be supplemented by an artificial control of demand and supply. There is private property, but it is no longer identical with private disposal. There are profits, but they are margins between predetermined prices, pri-

vate initiative being supplanted by state initiative. Free choice of occupation is gradually abolished to fit labor into the framework of the plan. Free choice of consumption has become rather limited since incomes are stabilized at a low level where the inelasticity of demand excludes heavier fluctuations.

It must, however, not be assumed that such a policy necessarily condemns the population to a permanently low level of consumption. There are other collective investment possibilities than rearmament, though it is true that armament programs have the special advantage of yielding inexhaustible investment opportunities which are not endangered by unforeseeable reactions which may develop because of the complicated relationship between consumers goods and producers goods industries. The armament program may gradually be changed into a program designed to increase the standard of living through the production of consumers goods like houses or cars. Such an increase in consumption, however, must not be mistaken for an increase in the freedom of consumption. The improvement of the standard of living will take the same collective forms as an armament program. Production and consumption are adjusted beforehand so that no unforeseen changes need be suspected. A varying number of works projects of a completely collective character, moreover, stands ready to take care of those who may become unemployed in connection with a change in the general aims of the totalitarian economy.

The contention that democratic countries may also well embark upon big investment programs is incompatible with the fact that only in totalitarian countries can the aims and means be adjusted to each other artificially whilst individual freedom is ruthlessly abolished by an endless variety of methods whenever it endangers the totalitarian system through lack of resources or the risk of uncertainty.

JOSEF HERBERT FURTH: How far might it be possible to adopt totalitarian economic policies in democratic countries?

In considering this question, we must rule out Russia and Japan as social and economic conditions in these countries differ too widely from Western standards. This leaves, in the totalitarian field, mainly Germany and Italy.

Italy has tried, since 1935, to imitate German economic policies, but apparently without much success. She did pile up huge government expenditures and an enormous deficit, she did prevent wages from rising above a standard which is as much below the German as the German is below the American, but she did not reach full employment. According to the figures published in the recent work by Professor Welk, unemployment was ten times as high in 1937 as it was when fascism came to power.

So it appears that imitating the German methods is, in itself, not sufficient for achieving the German results, even under similar political conditions. Why is that so?

The German system consists mainly in spending the sum necessary to reach full employment by public works, mostly on armaments, and in offsetting the inflationary effects of these measures by preventing a rise in prices and wages through a complete control of business and through the skimming of any excess purchasing power by taxation and government borrowing.

Some of these measures can be adopted only under special conditions prevailing

in Germany. For instance, Germany was able to sterilize and, partly at least, to confiscate foreign holdings of about 20 billion RM and assets of actual or prospective emigrants of about 8 billion RM. The great democracies are creditor nations and, therefore, cannot lay hands on foreign holdings. And as long as they want to remain democracies, they cannot compel a substantial part of their population to emigrate and to leave their property behind.

But the main difficulty arises in connection with the control of economic activities. A democratic government may, for instance, succeed in keeping wages down as long as there is some unemployment left. But I think it is impossible, by democratic methods, to keep wages down as soon as full employment is reached. Why should the workers refrain from trying to improve their standard of living when they know that a strike would be bound to be successful and when even the employers are willing to pay higher wages? Such a movement, however, would at once start an inflation and upset the whole mechanism.

To prevent the workers from acting, it is necessary to use all sorts of ideological propaganda without allowing any counterpropaganda, and to abolish the independent labor organizations. This means doing away with freedom of speech. It is necessary also to restrain by simple force the many who cannot be won over even by such a super-propaganda. This means abolishing the idea of due process of law. But without these fundamental civil rights, nothing remains of modern democracy.

I think, therefore, that totalitarian economic policies are inseparable from totalitarian political methods: if we want the totalitarian guaranty of full employment, we must accept its political consequences; but if we prefer democracy, we must look for another way of fighting unemployment.

ELIZABETH BOODY SCHUMPETER: Recovery in Japan was characterized by a great increase in industrial production and employment, and an equally striking increase in foreign trade. Measured by these indices, recovery was probably more rapid and more extensive than in any other country in the world. From the low point of the depression in 1931 to the outbreak of the China Incident in July, 1937, the volume of output more than doubled, factory employment rose by 60 per cent, and the yen value of imports and exports showed a gain of more than 200 per cent.

The explanation of recovery in Japan may be summed up as follows: (1) the government by its fiscal policy and its spending encouraged new investment and the expansion of private industry; it deliberately refrained from taxation burdensome to business, while the expenditures of the army and navy served to prime the pump in the most approved manner; (2) at the same time, industry—by means of a program of rationalization—so cut its costs, including labor costs, that internal prices rose only moderately despite the depreciation of the yen to one third its former gold par; (3) expanding production and foreign trade made it possible for industry to finance itself from profits so that the banks had surplus funds which they were glad to employ in the purchase of government bonds—even at low interest rates.

This process went on with no threat of a breakdown until the outbreak of hostilities with China. It has even continued to function remarkably well in so far as this has been permitted under the increasing control of a wartime economy.

The new prime minister and the former finance minister were assassinated and replaced by others. Finance Minister Takahashi guided the nation's finances during his four years in office. The actual policies and measures adopted were the following: (1) depreciation of the yen; (2) increased government expenditures mainly through the army and navy; (3) no new or increased taxes, increased expenditure to be met by borrowing; (4) borrowing was to be kept in bounds and tapered off as soon as possible.

The gold embargo was reimposed in December, 1931, and the yen was allowed to depreciate until it reached a level about 40 per cent below the depreciated pound. It has been stabilized with respect to the pound since 1933.

The appropriations for the army and the navy and for special expenditure in Manchukuo grew until they accounted for half of the expenditure of the national government. Government purchases were a great stimulant to the mining, metals, chemical, and machinery industries, which have had a phenomenal development since the depression. This would seem to be an example of successful pump-priming since the result has been, not merely an increase in the production of armaments and munitions but a great increase in chemical fertilizers, industrial chemicals, metals, and machinery for general industrial purposes. Our index of industrial production shows that by July, 1937, the output of consumers goods had risen about 40 per cent above the 1931-33 level, whereas that for producers goods was at least 100 per cent above the 1931-33 level. There has been considerable new investment in the metals, chemical, and machinery industries.

At the same time that the export industries were being stimulated by the depreciation of the yen and the heavy industries by government purchases, Takahashi as finance minister refrained from doing anything which would increase the tax burden on industry and commerce or cause any uncertainty or apprehension as to possible government action. There were no new taxes—with one unimportant exception—until the spring of 1937.

At the same time industry was cutting costs by its rationalization program. This had begun in the textile industries even before the period of deflation. We find evidence of lower labor costs in increasing output with decreasing employment in many of the export industries. The great increase in employment came in the new industries developed since the depression. We also find evidence of lower wage costs in a reduction of wage rates.

In the textile industries where technological changes and reorganization have greatly increased the output per worker, employment rose slowly. Factory employment in general rose about 65 per cent for men and about 50 per cent for women from the low point to the outbreak of the China Incident. Since then, employment for men has risen tremendously.

What has happened to real wages? Wage rates fell by nearly 20 per cent and have only recently begun to increase. Actual earnings, however, fell by only 10 per cent and are now above the 1926 level. The cost of living fell by 20 per cent and is now slightly above the 1926 level. The discrepancy between the movements of wage rates and actual earnings is explained in two ways. Increased employment has increased the proportion of new and unskilled workers and tends to be reflected in a lower average wage rate. There has also been some decrease in wage rates for all workers, but longer working hours have made it possible for a worker to maintain or increase his actual earnings.

Japanese prices rose very slowly despite the depreciation of the yen. By the middle of 1937, retail prices and the cost of living had risen only 20 per cent, domestic wholesale prices about 40 per cent, export prices 65 per cent, and import prices 180 per cent. Both import and export prices rose rapidly at the end of 1936 and early in 1937, when raw material prices were soaring everywhere. Japanese export prices expressed in sterling were still at very low levels. In spite of the high price of imported raw materials, Japanese manufacturers kept Japanese products cheap in terms of foreign currencies by reducing all other costs—especially labor costs.

The great increase in production and foreign trade which occurred under these conditions helped to create a situation in which the government's deficit bonds were easily absorbed. High profits made it possible for concerns to pay off bank loans and to increase capitalization without resort to the banks. The banks with ample funds at their disposal purchased government bonds. The increase in bank note circulation and in total clearings was what might legitimately be expected under conditions of rising prices and expanding business. A policy of easy money with declining interest rates was another feature of the national financial policy. In many respects this situation with respect to the banks was very like that which prevailed in the United States.

This, then, in brief describes the course of recovery in Japan. The severity of the depression together with political complications made the problem a most difficult one. The government by its fiscal policy and its spending encouraged new investment and the expansion of private business. Industry by its program of rationalization cut costs drastically. Labor maintained its earnings by working longer hours at somewhat lower rates. The banks reduced their advances to industry and increased their holdings of government bonds.

The method of financing the government spending was similar to that in the United States. The situation with respect to labor was more like that in Germany as was the nature of the government spending. The tax policy—the refusal to tax heavily for fear of discouraging recovery—was something peculiar to Japan.

EMIL LEDERER: There are various types of planning: (1) war economics; (2) the Russian type; (3) planning of totalitarian states; and (4) planning within a "normal" capitalistic state.

War economics would be, in every state, a system of complete control, because war financing will always entail the creation of additional purchasing power, which—without price control and rationing—would soon drive the economical system on the path of a runaway inflation.

Russian planning, which we might call a planned Industrial Revolution, exerted only a political influence but did not lead to any special measures in other countries, which were already fully industrialized.

Planning in totalitarian states is anticipated war economics; it might lead to a lowering of the standard of living in countries other than the United States.

Planning as business cycle policy is the consequence of obstacles which are in the way of horizontal expansion and the various measures of a planning policy (monetary policy, price control, regional planning, public works) are as many means to enforce horizontal expansion.

FACTORS MAKING FOR CHANGE IN THE CHARACTER OF THE BUSINESS CYCLE

JAMES W. ANGELL, *Chairman*

The following papers were presented at this round table: R. J. Saulnier, "The Significance of the Growing Importance of Durable Consumers Goods"; F. A. Pearson, "The Rôle of Agriculture in the Changing Character of the Business Cycle" (Professor Pearson's paper was read in his absence by Mr. G. E. Brandow); Fritz Lehman, "The Rôle of Social Security Legislation"; and William Fellner, "Pump-Priming as a Means of Fiscal Policy." The abstracts given below were prepared by the several speakers themselves.

R. J. SAULNIER: The available data do not indicate that durable consumers goods are a factor making for change in the character of the business cycle. There is no discernible long-period trend of increasing durability which can be accounted for in terms of the technical character of goods, nor do the data show a tendency for an increasing proportion of consumers' outlay to be spent on goods of this sort. The importance of durable consumers goods seems to be in their short-period influence on the pattern of the cycle. Available data do not cover a period of time of sufficient length to warrant the easy statement that such goods are steadily growing in importance.

The characteristic of postponability of replacement, which typifies the durable consumers good, makes it possible for demand for new output to decline sharply. Among the factors influencing this postponement, the rôle of price is clearly the most difficult to determine. It may be that flexibility of price, if it sets up expectations of further price declines, may lead to a more severe postponement of replacement than would be the case if the prices of durable consumers goods were fairly rigid. In this connection, however, much depends on the phase of the cycle in which the price change occurs, and on whether the price change is sudden and drastic or slow and gradual. Also, the fact that the nature of the good frequently changes, and that most durable consumers goods are bought on credit terms, makes it difficult to examine the case of the effect of cash selling price changes on consumer purchases.

Special importance attaches to the fact that a very large proportion of the consumer purchases of durable consumers goods are arranged on credit terms. The net contractions and expansions of consumer credit extended can make for changes in the flow of money demand reaching the producers of such goods. These changes in money demand lead changes in income flowing to consumers, and thus tend to accentuate both contraction and expansion.

The effect of consumers' behavior in purchasing durable goods, on the pattern of the cycle, is probably to make declines in activity more sudden and severe, and, if there is a large supply of the goods in existence (i.e., if the industry in question has reached what may be termed a maturity level), to make it possible for low levels of activity to be long, drawn-out affairs. This is especially likely if replacement demand was very high in the preceding boom; that is, if the average age of the population of goods in question is relatively low at the point of contrac-

tion. The effect on the expansion phase is less clear, depending on the length of the low level of activity, the age distribution of the goods population at the time of revival, the terms of financing installment purchase, the state of dealer stocks of the goods in question, and the state of unused capacity in the industries producing the goods. If dealer stocks are low and productive capacity is in real need of replacement and/or increase, the increase in consumer purchases may motivate a very substantial expansion of activity.

Further statistical investigation of durable consumers goods on a more particularized basis might show a special importance in certain branches of this general category of goods. It may also be the case that, for purposes of business cycle analysis, it is postponability of purchase rather than durability which is the factor of importance. Goods the purchase of which is postponable and goods which are durable are not necessarily the same. The fact that many durable consumers goods are in the luxury category accounts in part for the high variability of their replacement demand.

F. A. PEARSON: Agriculture is important to business chiefly because the rural areas are an important market for industrial goods and because the farms are a major source of raw materials to be processed. This paper deals chiefly with changes in the importance of the farm market for industrial goods.

From 1820 to 1930, the per cent of the gainfully employed persons engaged in agriculture fell from 83 to 21. This meant a great decline in the relative importance of the farm population as a market for goods, but the decrease in numerical significance was partially offset by the growing specialization and mechanization of agriculture. As farmers became less self-sufficient, and as machinery, electrical power, and the like came into use, the size and number of purchases made by each farmer increased.

Most of the discussions concerning the relation of agriculture to business have dealt with year-to-year fluctuations in agricultural production. Such changes in production have rarely been initiated by farmers; farming is a biological industry, is as much a job to the farmer as it is an enterprise, and cannot be stopped and started at will. Changes in production over short periods of time have been due chiefly to weather and disease.

Large or small crops normally bring correspondingly low or high prices. Farm income, however, is more important than price per unit in determining the farmer's purchasing power. The relation between size of crop and amount of income varies with different crops, but for agricultural production as a whole not much change in gross farm income would be expected to result from changes in total farm production. Moreover, the nation is so large and its agriculture so diversified that year-to-year changes in the volume of farm production are small.

If a large part of the agricultural income of a country is realized from exports rather than from domestic consumption, and if the size of its exports does not have a proportional effect on the world prices of the exported commodities, then the incomes of its farmers may vary considerably with production. Seventy years ago, the United States was somewhat in this position, but agricultural exports have declined greatly in relation to total agricultural production. As the impor-

tance of exports decreased, it became more and more unlikely that farm income would vary significantly as a result of changes in the year-to-year volume of production.

Although farm products furnish a large amount of business for carriers, processors, handlers, and storers of commodities, changes in the volume of farm production do no more than modify slightly the state of general business. Shortages of agricultural raw materials rarely retard industry; carryovers, imports, and decreased exports help in smoothing the erratic nature of crop production.

Changes in the volume of farm production have had little effect upon business activity for many years past. The coefficient of correlation between crop production and business activity during the crop years 1870 to 1930 was only 0.15.

Farm income depends chiefly upon the trend of farm production and the general price level. Farm products are basic commodities and are extremely sensitive to changes in the level of prices. The trend in the physical volume of agricultural production from 1910 to 1937 (1919 to 1937 projected back to 1910) was multiplied by an index of prices of 22 agricultural materials other than foods. The correlation between this product and gross farm income was 0.92. Probably as much as 80 per cent of the variation in gross farm income in the past three decades was due to variations in the price level.

When prices are stable, agriculture does not play an important rôle in fluctuations in industrial activity. Industry is directed toward the satisfaction of human wants. The most important of these are supplied by the food, clothing, shelter, and transportation industries. All except the first display a cyclical tendency. Textile manufacture has a cycle about two years in length. Building has an eighteen year cycle, and, since 1919, residential building has had a cycle slightly shorter than three years superimposed upon the longer movement. Automobiles had until 1931 a forty-month cycle which may have been an amplification of the older, irregular forty-month movement many investigators have noticed in general business. A composite of mathematically regular curves representing these cycles shows an interesting relationship to business activity.

The continuation of these cycles depends upon reasonable stability of demand. If the general level of prices is not changing, farm demand will not contribute to a change in total demand. But if the general level of prices should fall violently, the drop in farm income and farm purchasing power will be so severe that, coupled with other effects of a falling price level, it may break the less stable industrial cycles and prevent expected recoveries. This happened to the automobile cycle in 1931. If the general level of prices rises, the increase in farm income will be an important force in broadening the demand for industrial goods.

Changes in the volume of agricultural production play a minor rôle in changes in business activity, but changes in farm income resulting from an unstable price level have been, and may well continue to be, of great importance to business.

FRITZ LEHMANN: The influence of American social security legislation is not likely to change markedly the character of the business cycle.

Stabilization of employment by the system of merit rating in raising the em-

ployers' contribution to the funds for unemployment compensation is no longer expected to be of major importance. It is realized that, except for some seasonal fluctuations, unemployment originates in causes beyond the control of the individual entrepreneur.

Stabilization of consumers' expenditures in consequence of the distribution of insurance benefits will be rather restricted. The short period during which such benefits are paid makes these benefits a function of the increase of cyclical unemployment, rather than of the absolute level of unemployment itself. If the law had been in force during the Great Depression, no more than 10 per cent of the reduction in pay roll income would have been compensated by insurance benefits in 1933, since most of the unemployed would have been no longer eligible for insurance benefits. Unemployment insurance benefits in a shorter recession, however, will partly prevent people from consuming their savings and going into debt, and will thus augment available purchasing power early in the upswing rather than during the recession itself. If the government accepts the responsibility for supporting the needy by home and work relief, the influence to be attributed to unemployment compensation will be still less conspicuous.

The argument that it is impossible to transfer purchasing power from prosperity to depression is no longer acceptable. The argument rests on the assumption that unemployment insurance funds are invested in long-term bonds, and that the liquidation of such bonds will raise interest rates and decrease employment in investment goods industries. The wider application of open-market policy and similar means of monetary management suggests the probability that the bonds of the insurance funds may be liquidated without depressing the market. Under present regulations, moreover, the unemployment trust fund is invested in special government bonds. If the unemployment trust fund needs money, the government has to borrow, but the government may borrow on short term and thus meet the banks' desire for liquidity.

Great emphasis has been placed by many English and American writers upon the tendency of social security laws, particularly unemployment compensation, to make the wage structure still more rigid, and thus to intensify and extend depressions. It is said that old age pensions will diminish the supply of labor, especially in times of depression; and that unemployment compensation may prevent laborers from accepting work at much lower wage rates, may prevent women from going into the labor market when their husbands lose their jobs, and may strengthen the trade unions' resistance to wage cuts. At the present low level of benefit rates, however, and in face of the short period for which benefits are paid, these influences cannot be very great.

The adverse effect of an inflexible wage level upon business activity in a downswing is frequently overrated. An inflexible wage level is a great handicap for a country the exports and imports of which depend extensively upon the relation of domestic costs of production to the costs of foreign competitors. Domestic sales, however, will be stimulated by wage cuts only if the wage cuts are passed on to the consumers, and only if those whose income is not decreased expand their purchases by more than the wage earners are compelled

to reduce theirs. In the United States, as a rule, stimulation of sales and employment on either account is likely to be small. A downward revision of wage rates in particular industries, especially those producing investment goods, is more promising. But even here success is likely only if the reduction is made after the downswing has come to a standstill, and only if the reduction is believed to be temporary.

Pay roll taxes are often held to be an important factor making for the mechanization of industry and for technological unemployment. Such effects can occur only so far and so long as the price of laborsaving devices has not been affected by the taxation of pay rolls, and while employers have not succeeded in shifting their share of the tax to the employees or have been forced to pay the employees' share of the tax by granting higher wages. In the long run it is likely either that the costs and prices of machinery will rise in the same proportion as wages did, or that it will be universally possible to shift the pay roll taxes back to the workers.

The accumulation of pay roll tax receipts in the old age reserve account, and to a lesser degree in the unemployment trust fund, is considered by many a deflationary procedure adding to the difficulties of an economic system which is threatened by "oversaving." The initial effect of such an accumulation, which probably did contribute to the business recession in 1937, must be separated from its more lasting influence upon the character of the economy and of the business cycle. The accumulation of pay roll tax receipts has deflationary effects, and strengthens a possible tendency towards oversaving, only if such accumulation is not compensated by a decline in private savings nor by an increase in public expenditures. There is rather good support for the contention that social insurance will not decrease the individual's propensity to save, but it is less certain whether the assumption is justified that the government's propensity to spend will be unaffected by the availability of revenues from the taxation of pay rolls.

That the American economy is threatened by a tendency towards oversaving appears to be a well-substantiated assumption. It is unlikely that it will be permanently possible to find profitable investments for the savings made from a national income which has reached prosperity level. But in face of the "backlog" of investments existing at the present time, it appears uncertain whether any such discrepancy between available savings and profitable investment opportunities is already existent. The accumulation of pay roll tax revenues, however, makes it more difficult to lift the national income to prosperity levels.

WILLIAM FELLNER: For sociological and political reasons, if not for others, it is likely that in the future economic policy will be increasingly "active" in times of depression. It is more than doubtful, whether the political and social structure of the modern industrial state is fit to bear the burden arising from long-lasting depressions and large-scale unemployment. Hence it seems unlikely that the governments of these states should take the responsibility of remaining passive in the descending phase of the trade cycle. The efforts of economic policy will presumably take the shape of numerous measures of different character,

the most important of which will probably be that of distributing additional money income by means of fiscal policy. The regular development of such an activity in times of depression is, of course, bound to have some influence on the character of the cycle.

Pump-priming intervention undertaken in a state of the development in which there is already a large volume of deferred but more or less indispensable replacements, or in which—due to technological progress—important investment projects have appeared, might easily lead to a process of the same character as that of the "natural" upswing would be. In case the government activity does not exercise a specific influence on the psychological milieu of the community (i.e., does not create fears of what the public regards as "inflation," or fears of government competition with private enterprise, etc.), this activity is likely to start fundamentally the same process which somewhat later would have taken place anyhow; namely, a process of extension carried by private investments and essentially corresponding to the schema of the acceleration principle.

The case is different, however, if such measures are regularly applied in earlier stages of the depression, without regard to these questions: (a) whether or not, since the last peak, a considerable part of the equipment has become partially or totally worn out; (b) whether or not the discovery of more efficient methods of production (the discovery of entirely "new" commodities included) can be expected to bring about a considerable increase in the purchases of capital goods; and (c) whether or not some other factor, which in the countries with a long industrial past could only become substantial accidentally, might be expected to act as an important stimulus to private investment activity. As to this last, the "classical" stimulus would arise if loanable funds were available to the system on conditions at which they had not been available in previous periods for a sufficiently long time to bring about the degree of "roundaboutness" corresponding to the given interest level. Furthermore, shifts from one branch of production to another may give rise to a net balance from the point of view of the acceleration principle, since they create a demand for totally new equipment. On the other hand, however, they may only suppress the partial replacement demand for old equipment. Hence the significance of the distinction between short-run and long-run considerations in the theory of protective tariffs.

Now, there is reason to assume that the stimulus originating from a large volume of deferred replacements will be smaller in the future than it has been in many upswings of the past, since the price that has to be paid for arousing that stimulus consists of suffering a long and deep depression. As to technological progress, I see no reason for a pessimistic forecast concerning its future speed in the long run. For the moment, however, if income-creating intervention in the early stages of the depression is advocated, one is hardly entitled to neglect the problem of the influence of such intervention in case technological progress remains slow and in case none of the above mentioned "accidental" stimuli comes into effect.

Under such circumstances, the regular application of pump-priming measures would be likely to result in rather frequent but mild swings, unless the policy is handled unreasonably and leads to the hoarding of commodities from fear

of "inflation." If the policy is not handled unreasonably, then a net increase in the amounts spent on consumption might check and reverse the process of shrinkage in the consumers goods industries, and a higher level of consumption would be reached with an unimportant increase in the purchases of capital goods. As soon as economic policy stops its income-creating activity, comparatively small leakages might result in a deflationary balance ("oversaving") and thus might suffice to bring about a new downward movement of the system. The deflationary momentum of such a recession would be smaller than that of a downswing prior to which the acceleration principle had become more effective, since under these assumptions the vertical maladjustment of the system would be of comparatively small degree when the downturn occurs. Nonetheless, if the income derived from the production of capital goods is not large enough to provide for sufficient consumption demand in spite of the leakages, then a policy attempting to prevent long recessions would be forced to remain "active" practically all the time. For in this case a deflationary balance would occur as soon as the income-creating activity is discontinued, and hence it would soon be necessary to resume this activity anew. In no phase of such a development would it be possible for economic policy to become compensatory in the opposite sense and to work off thereby the pump-priming costs of previous phases.

The general conclusion which emerged from the foregoing papers and the subsequent discussion from the floor is that despite the marked innovations in economic facts and policies which have developed in this country in recent years, these innovations seem likely to produce comparatively little change in the broad character of American cyclical movements. This conclusion, which was supported on the whole both by the statistical data and by the speculative reasoning presented in the several papers, is markedly at variance with the frequent assertion that these cyclical movements have taken on a quite new pattern in consequence of the events since 1929.

THE WORKABILITY OF COMPENSATORY DEVICES

LEONARD L. WATKINS, *Chairman*

The following papers were presented at this round table: "The Efficacy of Central Bank Policy in the Light of Experience," by Paul T. Ellsworth; "The Theory of Pump-Priming Re-examined," by Paul A. Samuelson; "The Proposal to Tax Hoarding," by Emile Depres. The summaries below were prepared by the participants. A brief note is appended covering informal discussion of these topics from the floor.

P. T. ELLSWORTH: The efficacy of central banking policy in actual practice must be judged in the light of concrete objectives, which have varied widely in the past twenty years. Nowadays interest centers chiefly in the possible rôle of central banks in relation to the stabilization of the level of economic activity, with respect to which the lessons of experience are of limited usefulness because of the variance of objectives. Some conclusions about the effectiveness of the means of compensatory action by central banks may, however, be drawn from past actions.

A brief survey of American experience with restrictive and with expansive policy seems to point to two conclusions. First, given central banking institutions capable of controlling the size of the credit base and willing to do so, an expansion of the supply of money can be halted, and therewith a rise in the level of business activity. The use of private hoards, however, may (as in 1929) to a large extent offset restrictive action; this factor seems likely to be more serious in the future. A compensating consideration is the increased importance of bonds in the portfolios of commercial banks. As Dr. Woodlief Thomas has suggested, the imposition of restrictive measures, by establishing the probability of declining bond prices, may tend to cause banks to unload rather heavily and thus bring a sharper rise in long-term interest rates than in the past.

Second, experience indicates the primary importance of the timing of policy and of vigor in its application. This is especially important after the downturn: a sharp reversal of policy is essential before the responsiveness of the economic system becomes paralyzed.

Because with qualified exceptions it has never been tried, experience tells us little about the efficacy of a prompt and vigorous easy-money policy as a compensatory device. To the question, can such a policy, introduced promptly at the turning point, prevent depression, no single answer would appear to be possible. The outcome will depend upon (1) the effect of central banking policy on interest rates and (2) the responsiveness of investment demand.

With respect to interest rates, those on long-term securities are crucial, since it is these which will influence a revival of long-term investment. For reasons opposite to those already indicated, these rates should be more responsive in the future to an expansive monetary policy. With an open-market policy carried to the point of providing large surplus reserves and with the announced intention of bringing down long-term rates, it would seem probable that banks would be willing to support the bond market.

The responsiveness of investment demand at the turning point will be largely determined by the character of the preceding period of expansion. If credit alone has been relatively overexpanded and no serious structural maladjustments have appeared, then investment demand should remain elastic and the volume be well sustained. If, however, investment has been concentrated in certain lines during expansion, these fields of investment furnishing the backbone of prosperity, and if investment has been carried to the point where saturation of these important outlets has occurred, collapse would seem at first sight to be inevitable. Such a dominance of active investment by some outstanding industry or industries would seem, however, to imply a relative starving-out of a wide range of less prominent outlets. These are passed over because they are less markedly profitable and less favored by speculative enthusiasm. It is possible that a central banking policy which was effective in lowering long-term interest rates might stimulate a recovery of investment in these relatively underdeveloped lines, provided action were brought to bear promptly, before the level of incomes had had time to suffer a severe slump.

Where expansion has been based on the introduction of new techniques in the consumers goods industries, with comparative stability of wage incomes and a rapid increase in the output of consumers goods, a more difficult situation is likely to arise. For under existing circumstances, price reductions are apt to be delayed. This will make a high rate of investment necessary to avoid the early appearance of excess capacity and of a deficiency of purchasing power. These results, however, cannot be avoided by such a remedy. Collapse is inevitable, and the downturn following this type of expansion would be especially difficult to handle. Unless there had been a considerable accumulation of investment requirements (such as housing, transport) during the years of rationalization, central banking policy alone would be ineffective.

Without adequate knowledge of the period of expansion, we cannot say how successful monetary policy might prove as a compensatory device at the downturn. In any event, a rapid and vigorous easing policy should be tried. Under certain conditions it would undoubtedly be ineffective, but in no event would it be apt to be harmful, since the mistakes of the recent past are unlikely to be repeated.

PAUL A. SAMUELSON: As a preliminary to the study of governmental fiscal policy some investigation into the nature of the private economy is necessary. Explicitly it is assumed that the economic system is not perfect and frictionless, that the possibility of unemployment exists, and that there is a tendency toward cumulative movements of a disequilibrating kind. If at high levels of the national income individuals wish to save, i.e., to accumulate earning or nonearning assets, business enterprises as a whole can only avoid losses if there is a sufficiently high positive level of net investment. However, it is to be noted that there is no tendency even in a perfect capital market for the rate of interest to equilibrate the demand and supply of employment. The level of net investment is capricious and volatile and often inelastic with respect to the rate of interest, being dependent upon the state of expectations and technological innovations.

Two partially independent problems in fiscal policy can be distinguished: (1) as of any preassigned cumulative deficit, algebraically positive or negative, it is necessary to select the optimum time shape of governmental expenditures; (2) a decision is necessary as to the level of governmental expenditures and cumulative deficits to be permitted. In connection with the problem of timing there is a growing tendency in the literature to regard the downward movement as disequilibrating and unnecessary, and hence to prescribe a program which shifts expenditures more heavily towards the beginning of the depression and away from the bottom. With respect to the desired long-time level of governmental expenditures there must be a weighing of the costs and advantages at each level. Of particular importance is the state of private net investment, an insufficiency of which would make long-term deficit spending mandatory.

The mechanics of the effects of government expenditures upon the level of income and employment still present many difficulties. The view, stated by Mr. Keynes in the *General Theory*, that the multiplier holds instantaneously represents a backward step from the more general analysis of the lagged effects through time. The effects are hardly instantaneous. The approach to the indirect effects of expenditures by way of the velocity of circulation, on the other hand, appears to be completely fruitless. The doctrine of the multiplier does not always take into account indirect effects of governmental expenditures on private investment. Though the combined figure (direct governmental plus induced private investment or disinvestment) can conceivably be negative, experience suggests that, through the acceleration principle, induced private investment will make the governmental expenditure multiplier exceed the investment multiplier.

EMILE DEPRES: The numerous proposals to tax hoarding, respite considerable diversity of detail, have one characteristic in common: they seek to make the holding of money costly. Historically, these proposals have been confined to currency, but the more comprehensive tax scheme developed in Arthur Dahlberg's "When Capital Goes on Strike," will be taken as the basis of discussion. This plan embraces currency, through the issue of a new type of depreciating notes, and demand deposits, through the imposition of an equivalent monthly tax on average balances in demand deposit accounts above a small exempt amount. The holding of coin is prohibited in amounts above twenty dollars, and special provision is made to ensure the prompt presentation of checks for payment.

A variety of technical questions is raised by the scheme, such as the workability of the twenty-dollar limitation, the possibility of evasion through the holding of matured drafts, securities, etc. Questions of this sort, and the more general question of the legality of the scheme, cannot be dwelt upon here. It is probably valid to assume, however, that it is technically feasible, through some variant of Dahlberg's plan, to make the holding of money costly. Leaving aside the question of political and social feasibility, it is perhaps not unfair to suggest that a vast amount of skillful persuasion would be necessary to inform and reconcile the public to the proposed innovation, and that, for the present at least, the proposal probably has more theoretical than practical value.

The effect of making the holding of money costly would be to shift demand

away from money principally to nearby alternatives. It is important, if the plan is to be effective in expanding output and employment, that the effects of the tax should not be dissipated in a reduction in the quantity of money. Without supplementary measures to assure control over the quantity of money, a tax of sufficient magnitude to alter appreciably the community's asset preferences would reduce deposits through two possible channels: the bidding away of assets from the banking system, and the conversion of domestic money into foreign money.

In order to prevent a contraction of bank loans and investments, it would perhaps be sufficient to tax excess reserves, thereby making banks as eager to retain their existing asset portfolios as the public was to bid them away, but it might be necessary to go further by adopting one of the various 100 per cent reserve schemes. With respect to the second channel through which contraction of bank deposits might occur—conversion of domestic money into foreign money—it would presumably be necessary to introduce a rigorous control over capital export. If the taxation of money were supplemented by measures of this sort to control its quantity, the tax scheme would be capable of exercising its full effect on employment, output, and prices.

The effects of such a tax may be analyzed either in terms of velocity or of changes in the size of hoards, but it is better to regard the tax simply as a means of shifting the community's demand from money to alternatives. Viewed in these terms, the tax becomes simply a device for pressing "easy money" further. In periods when increments to the money supply have little or no effects in reducing interest rates, further downward pressure may be achieved by making money costly, that is, by reducing the demand. The effect on the prices and yields of alternative assets would be most pronounced in the case of those assets which represent nearby alternatives to money.

The really essential questions concern the degree to which the effects of the tax would permeate the more remote sectors of the interest rate structure and the extent to which resulting interest rate changes would alter the community's expenditures for investment and consumption goods and services. How much would a given tax on money affect the yield upon the highest-grade, long-term securities, upon less high-grade bonds and equities, and how much would it affect interest rates in partially insulated sections of the capital market, such as that for residential mortgages? What would be the effect upon expenditures for capital goods and upon the community's disposition to save?

Although it is impossible to furnish precise answers to these questions, a few general observations may be appropriate. The taxation of money, viewed as a means of ironing out the shorter fluctuations in business, does not seem to offer much promise of substantial success. In periods of depression even a relatively high tax, if generally regarded as only temporary, would have a greatly damped and restrictive effect upon interest rates outside of the comparatively unimportant short-term market. Viewed as a compensatory device for meeting a possible secular underemployment difficulty, such as appears to have resulted from a combination of deficient investment outlets and high liquidity preference, the tax proposal has more to recommend it. Even here, however, it is doubtful that a moderate tax would furnish much stimulus to economic activity. In periods of deficient investment, the volume of capital expenditure is likely to be highly

inelastic in response to changes in the pure rate of interest, since the low level of utilization, and resulting unprofitableness, of much existing capital equipment, provides a barrier to the resumption of physical capital outlays which even a considerable decline in high-grade bond yields, can do little to mitigate.

Despite this qualification, the taxation of money is by no means wholly without theoretical merit as a means of meeting the problem of secular stagnation. Unless the demand for capital is absolutely inelastic, the tax, if placed high enough, could be made to have a significant effect on physical capital outlays. In the judgment of the writer, however, there are other more promising ways of meeting this type of problem. In seeking to lower the cost of loanable funds, it would be better to try to reduce rates in those sectors of the capital market which have an intimate bearing on capital expenditures. For example, a further lowering of residential mortgage rates would undoubtedly contribute to the expansion of construction activity. Finally, a broad field of opportunities for socially productive and noncompetitive public investment remains to be exploited. One can scarcely hold that the whole range of investment outlets has become deficient until this field has undergone far fuller development.

Don Humphrey, commenting on investment opportunities, pointed out that investment had probably gone into rigid price industries to an important extent during the boom period and he thought an investigation of investment on the basis of this classification would be significant. He also stressed the complementary devices to be utilized in conjunction with central banking policy. Ellsworth agreed as to the necessity of a public works program in time of slump but reaffirmed his view that industries relatively undeveloped during the preceding boom may offer promising investment outlets. It was observed, in opposition to Humphrey's argument, that tin, a commodity subject to rigid price control, for example, had not provided a favorable investment outlet.

Gerhard Colm expressed some optimism as to the stimulating effects of a public works program on private investment and suggested that these effects be termed "tertiary" to distinguish them from the "primary" and "secondary" effects of the Kahn-Keynes analysis. He also questioned the adequacy and feasibility of a five-year budget plan.

Gunnar Myrdal stated that Sweden's budgetary plan does not call for a five-year plan, but it permits an indefinite deficit and the five-year period is utilized for distributing the deficit for accounting purposes. He emphasized also the importance of institutional factors in determining the so-called "tertiary" effects.

Paul Studenski pointed out that examples of the dual budget system, bearing some analogy to the capital and running budgets of Sweden, are to be found as an independent development in some state and municipal budgets in the United States. He also observed that borrowing for relief purposes by local and state governments is frequently limited to short-term obligations.

Henry H. Villard emphasized the desirability of utilizing taxation as a compensatory device. He also questioned Samuelson's position with respect to in-

come velocity, observing that a significant relationship must exist between deficit spending and velocity. Myrdal stated at this point that Sweden was prepared to reduce taxes in future depressions. Samuelson, in reply to the comment on velocity, stated that velocity appears as a resultant, but he conceded that analysis of the effects of deficit spending might be undertaken from the velocity angle.

J. M. Clark questioned whether the proposal to tax hoarding should be judged so largely in terms of Dahlberg's plan, emphasized by Depres. It was suggested by another commentator that recent sales of Treasury bills at a premium, attributable in part to state property taxes on deposits, provided an illustration of the stimulus given to investment by the taxation of hoarding. The observation was also made that the taxation of hoarding provided a means of establishing a negative rate of interest in periods when very low positive rates are ineffective in stimulating investment.

INDUSTRIAL RELATIONS

A. HOWARD MYERS, *Chairman*

The Chairman opened the discussion with a statement that the insecurity of employment and the loss of personal contact in employer-employee relations threatened the stability of our traditional American way of living and working together, that social security, public works, collective bargaining, and national labor standards statutes could help in adjusting but could not resolve these problems.

The first paper of the meeting, given by LLOYD G. REYNOLDS, dealt with "Proposals for an Annual Wage." It pointed out that annual wage plans may be divided into two main groups:

1. *Guaranteed income plans.* The General Motors Corporation, for example, now undertakes to make advances to laid-off workers which must be repaid when the man returns to work. Since unemployment compensation schemes now exist in all states, it is doubtful whether workers benefit very much from company plans of this type.

2. *Guaranteed employment plans.* The term "annual wage" should probably be reserved for plans of this type which attempt to cope with the problem of irregular employment. This group may be subdivided into (a) those which guarantee steady work—for example, the Procter and Gamble and the Seaboard Air Line plans. A plan of this type, if applied to the entire working force, implies the elimination of seasonal fluctuations of production. (b) Where seasonality cannot be eliminated, it may still be possible to guarantee a fixed amount of work during the year. The Hormel Company, for example, contracts with the members of each department for an annual volume of output. The hours worked vary greatly from season to season and even from day to day, but employees receive equal weekly pay checks throughout the year.

Cyclical variability of production constitutes the greatest obstacle to the spread of guaranteed employment plans. Producers of steel or machinery, for example, would be assuming a great risk in making their wage bill a fixed cost for a year in advance. In such industries as building and clothing, moreover, the business of a particular firm may fluctuate greatly even though the total output of the industry remains constant. The risk assumed by the employer under a guaranteed employment plan can be reduced by safety-valve provisions, but this reduces correspondingly the security of the worker and thus impairs the character of the plan.

Industries producing staple consumer goods, and the marketing and service occupations, probably afford the best opportunities for guaranteed employment. Most of the workers covered by the dozen or so existing plans are engaged in producing standardized necessities—soap, men's shoes, baby carriages, meat, canned vegetables, and the like.

Joint negotiation of annual wage plans is desirable not only to protect the workers' interest but also to forestall the suspicion with which workers tend to greet drastic innovations by management. The Hormel Company has a contract with a C.I.O. union, while the Seaboard Air Line has a contract with the Fed-

erated Shop Crafts. The understanding and approval of the plan which exists in these cases is evidence of the value of collective bargaining.

The effect of guaranteed employment plans on the business cycle is not clear. The incomes of workers covered by such plans would be maintained for some time after the beginning of the recession. It must be considered, however, that the amounts paid out as wages may be withdrawn from other uses. An additional result would be the building up of large inventories during the life of the guaranteed employment contract. When the contract expired, the contraction of the working force would be correspondingly severe; moreover, the reduction in the amount of part-time employment might have a tendency to reduce the total employed in a particular plant.

In concluding his paper, Mr. Reynolds pointed out that in spite of these uncertainties, the spread of such plans seems highly desirable. In relatively stable industries and in years of moderate prosperity, their promise of security can probably be fulfilled. And the assurance of a steady income for even a year in advance means much to workers' happiness, to industrial efficiency, and to the stability of community life. In the ensuing discussion, a number of labor leaders in the audience objected to annual wage plans as paternalistic and as antiunion when made effective by management without consulting labor.

PHILIP TAFT presented the second paper on "Some Problems of New Unionism in the United States." Mr. Taft pointed out that the new unions may be defined as those labor organizations which have been formed since the latest upsurge of unionism beginning with the NRA. Some of these are affiliated with the American Federation of Labor, though the majority are affiliated with what is now the Congress of Industrial Organizations. The problems of the new unions in the American Federation of Labor concern mainly the federal locals that have been organized in response to the demands of the workers in the mass production industries. Their internal difficulties arise chiefly because they are surrounded by powerful craft and semi-industrial unions who have nominally pre-empted certain trades and occupations and are always ready to assert their privileges and their rights.

Many of the external problems are common to unions affiliated with the A.F. of L. or the C.I.O. In addition some important special problems exist. A number of the new unions operate in industries dominated by large aggregations of capital. Labor organizations had not been allowed to gain a foothold and consequently the workers have not had the time to build the institutions and develop the leadership indispensable for the efficient and orderly functioning of unions. Absentee management is also a problem for the new organizations. Away from the scene of operations, the controlling managers are frequently unaware of changed conditions and even when absentee managers have no desire to fight the new unions, the need to gain their consent for a new labor policy leads to needless delay which may exacerbate the already strained relations.

In many cases firms recognizing labor organizations for the first time have refused to grant any advantage to union members in hiring which might encourage or compel the worker to support the union by regular payment of dues.

This has created situations where even in cases where the union has been se-

lected as the collective bargaining agent, it is unable to collect sufficient dues and assessments to maintain its administrative staffs. Unless these new unions are to remain in a virtual state of dependence, they must devise methods and techniques to compel their members to pay their dues regularly. In this endeavor they can expect little assistance from the employers. A complicating factor in this regard is that many of the new unions operate in low-wage industries where even low dues may be a burden not easily borne.

The new unions are also discovering that the skilled workers are not anxious to join with their unskilled fellow workers in one organization. Labor Board elections indicate that the skilled, in the majority of cases, prefer to join a craft rather than the industrial group. This attitude is not unreasonable, even if it is a negation of the wider solidarity of labor. A skilled worker—machinist—may find employment on a railroad, in a ship yard, contract machine shop, automobile plant, and a considerable number of others. It is, therefore, less expensive and troublesome to join one union which can render service and protection on all jobs. The division between the C.I.O. and the A.F. of L. prevents, for the present, the working out of an agreement which would recognize the desire of the skilled to remain independent, and yet allow for the working out of a common program which would allow for co-operation in solving mutual economic problems. The split between the A.F. of L. and the C.I.O. is even more serious. The mutual recriminations and charges inevitably lead to an unfavorable reaction among the workers. The large antiunion votes in elections for collective bargaining is undoubtedly due to the internecine struggle in the family of labor. Moreover, the split has led to strike-breaking of one group against the other, and the forcing of workers off the job because they had joined the wrong union.

The new unions also face the difficulty in that their members are employed in many instances by large corporations. A large union is only the more powerful when it faces small and scattered employers. The superiority of large numbers of union men when facing a single or group of large employers is open to serious question. Even though the losses incurred by a large employer may be proportionately greater for a large than for a small employer, they can be more easily borne by the large one. In contrast the financial strain upon the union is very great, and the financial outlays by the union may average, in a strike of the magnitude of Little Steel, close to \$100,000 a week. It means that such strikes become extremely difficult. This is where the new unions are more vulnerable than the smaller craft groups. Moreover, the absence of exclusiveness has some serious drawbacks in this connection. A limited or exclusive union could improve the position of its members, at least in part, at the expense of its other workers. Under conditions where all are organized this becomes impossible. The granting of a vertical wage raise might hamper an employer from operating under existing price conditions or at least reduce his profit margin to a point where he might feel that a strike with the union is economically desirable.

Some of the new unions have also assumed that wages were closely linked to the price structure and have attempted to prevent any pressure for lowered prices in fear of their repercussions on wage rates. Even though the interests of labor and the industry are closely tied together, it seems an error for the unions to use their political power to aid in the maintenance of monopolistic prices.

A number of the new unions have also embarked upon ill-planned organizing drives without prior educational campaigns among the prospective members. This has, in some instances, led to a temporary large increase in members followed by a precipitous decline. It might be that the new unions in the C.I.O. attempted to capitalize on the existing favorable sentiment, but such campaigns are not conducive to the slow and solid growth of union sentiment and institutions which is the greatest asset in periods of adversity. To what extent the local leadership is responsible for this situation cannot be estimated, but sufficient evidence exists to prove that inexperienced leaders have not made the solution of problems easier. In this connection, the split between the A.F. of L. and the C.I.O. has played a decisive rôle, for the C.I.O. was prevented from using many sympathetic, experienced local leaders who would have avoided the impetuous and hasty action of many organizers for the new unions. The latter have needlessly antagonized other labor groups, invaded old and organized jurisdictions, and have widened the breach within organized labor. Moreover, the need to recruit organizers hastily has forced the C.I.O. to employ many who were not union-minded and to whom the union was only a means of agitating for a left-wing political program. Organizers and local leaders following the trade union line of the Communist Party are a real problem in a number of C.I.O. unions. Not only are they primarily interested in the advancement of political aims, but their presence is responsible for the formation of other factions with the result that the interests of the unions are neglected for the advancement of factional advantage.

The presence of these irresponsible groups has had its effect on employer relations. Contract violation and failure to use the machinery of conciliation has been admitted. The older and wiser leaders recognize the folly of such tactics, and they have fought against them. However, employers by their refusal to co-operate and give more than grudging recognition to the new unions encourage the irresponsible elements and make the task of the conciliatory leaders more difficult. The top leaders recognize that they have a stake in industry, and they have tried, as in the steel industry, to encourage employer-employee co-operation so as to eliminate waste and improve methods of operation. It is only the policy of the older and more experienced leaders which will prevent a high rate of infant mortality among the new unions.

Mr. Taft's remarks caused considerable discussion, particularly on the part of the union officers in the audience, who objected to the emphasis on the deficiency of the movement. During this discussion, Mr. Edwin Witte made an extemporaneous plea for unity in the labor movement in 1939.

The final paper of the meeting was presented by WILLIAM GORHAM RICE, JR.¹ It dealt with "The Significance under the National Labor Relations Act of Contracts between Employers and Their Employees or Their Employees' Representatives." It pointed out that the central aim of the National Labor Relations Act is the facilitation of collective contracts, but the NLRB has no concern with the enforcement of these collective contracts. Its job is to facilitate their creation by redressing unfair labor practices of employers and by determining employee representation for their negotiation.

¹ To be published in full in the March issue of *Michigan Law Review*.

The legal significance of collective contracts is no new problem. But the recent statutes favoring collective bargaining—the Norris-LaGuardia Act and its state analogs, and the several labor relations acts—present some new puzzles—how to reconcile the two types of acts with one another and how to reconcile them with the common law and the constitutional law of freedom to make contracts and protection of contracts when lawfully made. Sometimes there is thus acute conflict in aims of contract law and of the labor relations acts.

Mr. Rice's paper discussed only certain questions that the NLRB is trying to solve: (1) What becomes of individual employment contracts when statutory contracts are made; that is, when collective contracts are made in the exercise of the exclusive bargaining right conferred on the majority representative of employees by NLRA Sec. 9? (2) Does the existence of a collective contract made by a union not exercising this exclusive bargaining right hinder the exercise of that right and the making of a statutory contract by some other union? (3) Does the existence of a statutory contract hinder the selection of a different union as representative and its exercise of the exclusive bargaining right?

These questions may arise in both types of NLRB proceedings. In redressing unfair labor practices the Board sometimes affects contracts by ordering the employer to desist from carrying them out and to post notices that it will do so. In representation proceedings the Board affects contracts only indirectly; that is, by regarding them as a bar to, or more often in disregarding them in, making its determinations.

(1) As for individual contracts, in proceedings of the first type, the Board has frequently ordered repudiation of "yellow dog" contracts and others impeding collective bargaining. In representation cases the existence of individual contracts has never stopped investigation or certification.

The Supreme Court's phrase in the Virginian Railway and Jones and Laughlin cases that exclusive bargaining means negotiation to the exclusion of other collective negotiation "but not as precluding such individual contracts as the company might elect to make directly with individual employees" has, not unnaturally, been misunderstood even by other courts. It expressly refers to a statement in the brief of the Solicitor General in the Virginian case which points out that the employer in general may still contract with individuals but "may contract with the duly designated representative to hire individuals only on the terms of a collective understanding between the carrier and the representative." This is the explanation of the Act which the Court accepts. One may paraphrase, I think, by saying that the collective contract is of higher rank than the individual contract just as the constitution outranks the statute.

(2) Like some individual contracts, some collective contracts violate the policy of the Act, notably those made by a union that is employer-favored, at least if it purports to act as exclusive representative; also those of a union so purporting to act when actually it is not the choice of the majority. In such cases the Board orders the repudiation of the contract and, if the union is company-favored and not nationally affiliated, the "disestablishment" of the union as a bargaining representative. No disestablishment order, however, is made against a local of a national union, and the Supreme Court in the *Consolidated Edison* case has recently reversed the Board in ordering repudiation of the contract where the union

contracted for its members only. That a statutory contract, especially if for a closed shop, could stand when made by an employer-favored union, even though a national organization, is improbable. This partial reversal of the Board's order in the Consolidated Edison case seems to me to have no wide implications. The court, moreover, expressly states that the continued operation of the contracts which it thus saves "is necessarily subject to the provision of the law by which representatives of the employees for the purpose of collective bargaining can be ascertained."

Thus it appears that even valid collective contracts, when not made in the exercise of the exclusive bargaining right of Section 9, are subject to the exercise of that right. This dictum confirms the well-settled course of the Board's practice of not allowing such nonstatutory collective agreements to hinder representation proceedings.

(3) Should a statutory contract have more enduring effect? So far the Board has never answered this question in either of its two types of proceedings. It has never ruled whether it would be an unfair labor practice for an employer to carry out a statutory contract despite a change of employee preference. In the few cases where the question has been presented, the Board has found that the employer's conduct was not justified by the contract that he invoked. It has never ordered him to repudiate or to violate such a contract. On the other hand, it has never freed him from the charge of unfair labor practices merely because his conduct was in conformity with such a contract made with a union which then was statutory representative but is no longer the choice of the majority. In the Peninsular and Occidental S.S. Company case, the Fifth C.C.A. called it "a valid existing agreement" which, "no other bargaining agent having been designated by the Board," the company was bound to apply. Though this was only dictum, it announces a rule which seems sound; namely, that a statutory contract remains effective according to its terms until the Board certifies a new representative.

Is it any bar to such a new certification? The Board has not yet had to make a square decision. It has disregarded most such contracts, but always for special reasons. It has in some cases refused to disturb them; but always for special reasons. So it may still make either an affirmative or a negative answer to this third question. Its dicta are likewise inconclusive.

But it has found a great variety of situations for disregarding statutory contracts. It disregards them, of course, if made by an employer-favored union or a minority-choice union. It disregards a statutory contract if made after a petition for a representation inquiry has been presented to the Board by a rival union, or even (in Colonie Fibre Company) if made after the rival union has notified the employer of its claim. And it applies this rule even to automatic renewals of a standing contract. It naturally is not deterred by a standing contract without terminal date; that is, that may be ended only by notice of a party, or with a remote terminal date. It therefore disregarded in Metro-Goldwyn-Mayer Company and in Columbia Broadcasting Company five-year contracts which had been in force for over a year.

It disregards contracts if they cover improper units for bargaining; the Board will decide what is the proper unit. On the other hand, the course of bargaining is a strong indicator of what unit is appropriate; hence the Board frequently in-

vokes contracts as a bar to new unit determination. Admair Rubber Company is a recent striking case of this sort. And in Superior Electrical Products Company it held that the express assent of the employees now sought to be segregated—their express assent to the making of the existing contract which had only one year's duration—was a reason for not considering a new unit of representation till the contract was about to expire.

When a contract is about to expire, the Board often certifies a new representative, but perhaps only for the purpose of enabling it to negotiate concerning conditions after the expiration date, though the certificate issued by the Board is not so restricted. In some cases the Board has delayed decision until an existing contract has expired or is within a few weeks of expiring; but it has never said that this was the purpose of its delay.²

Not only is the integrity of statutory contracts to stand against changes in employee preference still in doubt, but the underlying theory of these contracts remains uncertain. Are they agreements between the employees, acting through agents, and the employer; or are they agreements between the union and the employer? The latter view was the clear law of collective labor contracts prior to the labor relations acts. Are statutory contracts different from other collective contracts in this respect? The former view is that embodied in the Railway Labor Act, as clearly expounded by the National Mediation Board. One consequence of this view is that a change of representative does not affect the contract except to alter it so as to make the new representative its administrator for the employees. Early NLRB decisions expressly accepted this view. Later ones do not repudiate it, but certainly do not confirm it.

² In the Todd-Johnson Dry Docks, Inc., case, the Board entertained a new petition six months after certification of a different union and three months after effective date of contract, but, stating that perhaps the new petition should have been dismissed, waited until more than a year had expired from first certification before issuing decision. (A.H.M.)

WAGES AND HOURS IN RELATION TO INNOVATIONS AND CAPITAL FORMATION

Z. CLARK DICKINSON, *Chairman*

Summaries of the following papers read at this round table were submitted by the speakers: "The Effect of High Wages upon the Introduction of Machinery," by Witt Bowden; "The Effect of Modern Technological Conditions upon the Employment of Labor," by Edna Lonigan; "Minimum Wage Legislation and the Problem of Wage Differentials," by Merrill G. Murray.

WITT BOWDEN: If employers are convinced that wage levels are high in comparison with costs of capital equipment or techniques, this view may tend to cause a substitution of capital for labor. On the other hand, if employers are convinced that labor costs are too high for profitable employment of labor even with additional laborsaving equipment, this view may tend to retard investment in capital goods. But what employers and their bankers decide to do in specific instances will be determined by influences much more complex than the desire to substitute cheap machinery for dear labor.

The primary and most vital motive is the desire to take advantage of market demands; and the bearing of wages on the working out of this motive varies significantly from period to period and also from employer to employer. Many technological changes that have more or less incidentally reduced labor costs have been primarily connected with the conserving of materials, the improvement of the product, the use of a newly discovered process or product, the building of a plant in a new location, or replacement due to wear and tear, obsolescence, and competition.

Financial conditions as distinguished from general economic conditions have seemed favorable in recent years to investment. Interest rates have been greatly reduced and prices of capital goods have been consistently below the 1929 level. Hourly wages, on the other hand, have risen above the 1929 level. The amount of new funds used for domestic investment since 1929 has nevertheless been extremely slight. And yet there has been a vast amount of technological improvement since 1929. There have been extensive reductions in the labor required per unit of output. Durable goods production in 1937 reached almost the same high proportion of total production in manufacturing as in 1929. The output of industrial instruments for indicating, recording, and controlling production processes has risen significantly, and there has been a remarkable expansion of the machine-tool industry. There is much excellent capital equipment that is unused or inadequately used.

Recent improvements in the capital structure have required an unprecedentedly small volume of new investment, partly because of the nature of recent technological changes. These have emphasized economies in the use of capital and have been largely incidental to the use of depreciation and replacement funds. New industries, to be sure, may call now and then for new savings; but existing corporations are increasingly able to handle the development of new products and new industries by use of their depreciation and replacement funds and of

capital transferred from old and declining to new and expanding sections of their enterprises.

A fundamental explanation of the slight demand for new funds is the curtailment or disappearance of traditional opportunities for investment long enjoyed during the era of external expansion. This era ended with the World War, although its end was obscured for a decade after the War. The older, more highly capitalized countries have entered an era of "secular stagnation" of traditional investment outlets.

The usual analysis of the rôle of wages in capital formation has taken for granted the continuation of historic conditions of long-term expansion interrupted merely by occasional depressions, with external investment outlets providing the basis for the use of savings obtained by keeping wages low. Radically different contemporary conditions call for a re-examination of the rôle of wages in capital formation.

In the bygone era of almost uninterrupted external expansion of demand for investments, wages, from the point of view of the profitable employment of labor, were chiefly significant as cost of production. Employers were traditionally able to take advantage of an expanding market, both at home and abroad, in which the wage earners of a particular area were relatively unimportant as consumers. Businessmen could therefore concentrate their attention upon the problem of keeping down their wage bills. In an expanding market, the substitution of machinery for labor was more apparent than real because the expansion of demand ordinarily prevented any net substitution or displacement of labor or contraction of wage-earner buying power.

Under contemporary conditions, funds for investment are usually abundant, are maintained by institutional resources regularly accumulated, and are subject to expansion by means of credit facilities to any extent that prospective market opportunities may warrant. But prospective market demands in turn depend now to an unprecedented and vital extent on the buying power of wage earners as the principal group whose income is used primarily for consumption. The individual employer must continue to view the wages of his own employees primarily as production costs, but he is not in the fortunate position of earlier employers in being able to view aggregate wages essentially as production costs. This contradiction, under the new conditions, creates a progressively serious dilemma.

Adjustments of prices and of interest rates are often advocated for controlling the flow of income and the volume of production and employment. If economic life is to be socially controlled through the price system, the latter must be essentially a controlled system. If power for control of prices is conceded, power for virtually any type of social control is implied. Even if this were the ultimate aim, a moderate influence on wages, including the social wage, is more immediately practicable within the present limits of action by trade unions, employers, and public agencies. Low wages, under present conditions of limited outlets for the investment of income, afford no solution of the problem. To make this assertion is not to deny that some wage rates may get out of hand in relation to other wage rates and in relation to production costs other than wages. But under contemporary and foreseeable conditions the flow into consumption of goods and

services produced by adequate employment depends vitally on increasing rather than reducing the income of the wage earning classes. Increases are particularly effective of course when they can be brought about by raising the lower wage rates and by stabilizing employment.

EDNA LONIGAN: Technological changes affect the employment of labor in three distinct ways: installation of new machines; management changes, which tighten the over-all organization of plant or industry; and changes in the general level of employment after all the effects of technological change on costs, prices, and markets have had time to take effect. Contrary to general belief there is no necessary connection between laborsaving and a falling general level of employment.

In practice, mechanization generally accompanies rising, not falling, employment. The employment records of the New York State Department of Labor, which cover two business cycles preceding 1933, together with state employment figures from Illinois, Wisconsin, Minnesota, Ohio, and Massachusetts, furnish no evidence that mechanization as such causes falling employment. There is no basis for the deep wave of pessimism among workers over spread of the machine.

The most important element in laborsaving was not that due to machines or to new specific processes, but rather that due to improvements in the over-all organization of industry. That was the result not of invention but of the rise of management to power in industry as an aftereffect of war-taught skills in organization. The influence of management was directed chiefly to the saving of time, and the more perfect functioning of the various parts of the total operation from raw materials to sales. Man-hours were saved, even where no changes in process occurred.

The most powerful stimulus to this tightening of organization was the high indirect costs of labor. Management experts discovered that when they replaced two less efficient workers with one efficient one, they saved not only the man's wages, but the costs of supervision, of space, of extra machines, of spoiled materials, and of lockers and washrooms. They also saved part of the nuisance cost involved in the stresses arising from various protective devices involving dealings with government, labor, or other agencies, which were very costly in time and nervous tension. The great bulk of labor saving had little to do with machinery.

Even so the total supply of employments should still have been rising, with new employments compensating for relative declines in other industries. The normal tendency is for technological advance to create more, not fewer, sources of employment. If higher employment does not follow, it is due to some malfunctioning of the price, debt, or investment system. The falling employment level might better be called "price unemployment" and the misleading phrase, "technological unemployment," be abandoned for good.

The absence of compensatory employments in the 1920's was primarily the result of the post-War fallacy of stable prices. The war-born faith in the stable price level was creating the greatest of all our inflations at a time when war-born technologies were flooding the country with goods whose cost was falling. This high production should have meant rapidly falling prices and rising consumption

for all classes. The marginal increase in income could have created the new employments in the mass production of consumers' necessities and semi-luxuries, in services, and in recreation.

The fundamental change in the employment cycle occurred not in 1929, but at the end of 1924. Our present unemployment is not the result of the machine nor even primarily of the business cycle. It is organic unemployment due to disorders in the vital organs of our economy.

The causes of falling general employment are complex and involve the total economic system. Basic for all remedies is first a clear distinction between two types of forces, first the necessary but disintegrating forces of invention, progress, and change, and, second, the unexplored reintegrating forces. The latter are the forces which serve to restore a new balance in the total economic system, after progress and invention have destroyed the old balance in the old situation.

One of the most useful integrating forces, historically, has been falling prices for goods whose cost of production was falling. The second integrating force is more rapid obsolescence of debt and a falling interest burden. Another is the more and more rapid widening of areas of new investment, to compensate for the smaller relative need for labor and capital in industries showing marked technological gains, with such improvements in our investment machinery as that requires. The fourth is careful examination of all protective programs, whether sponsored by government, labor, philanthropy, or industry, to determine their nuisance cost and to keep that cost as low as possible, by sound design and effective functioning. Until those or other equally powerful reintegrating forces are established there must be economic stress and human suffering.

Studies of the trends in welfare and in need from 1914 to 1930 show that no welfare program can long pay the cost of a truly declining economic system. Only full employment, which perpetuates itself out of its own productive earnings, will suffice to remedy fundamental weaknesses in the employment structure.

MERRILL G. MURRAY: Whether one holds to the marginal productivity theory or its variants or to the institutional school of thought, one can contend that a minimum wage, if wisely determined, need not in the long run narrow the differentials of skilled labor earning above the minimum if these differentials are, or have been, properly determined. But it may also be true that, whether the minimum wage is set at an economically high level or not, differentials between unskilled and skilled labor will be re-established, since each occupation will resist relative degradation in comparison with occupations it is accustomed to consider its inferiors. If this latter event occurs, the long-run or even possibly the immediate effect may be to increase unemployment, although it may be difficult to trace cause and effect directly.

Under the National Industrial Recovery Act, there was a uniformly large increase in average hourly earnings for both common labor and all labor in seven major industries examined. Of the seven industries—automobile, electrical, leather, lumber, petroleum refining, and slaughtering—all showed a widening in the differentials between common labor and all labor in terms of differences in cents per hour, and in the one exception, cement manufacturing, the differential narrowed by only six-tenths of a cent per hour. The proportionate or per-

centage change in differentials was smaller for all labor than for common labor in four of the seven industries. Differentials increased both absolutely and proportionately in the automobile, petroleum refining, and leather industries. If the earnings for common labor could be taken out of the rates for all labor, these relative losses in differentials might have been considerably narrowed.

Although there were concentrations about the minimum in low wage industries, such as the textile, tobacco, and boot and shoe industries, such concentrations can easily be explained as the immediate result of an enormous increase in unskilled rates. In these low wage industries, rates widened above the minimum after the first shock of the introduction of the codes.

Parenthetically, it may also be questioned whether a narrowing of differentials may not be a healthy occurrence when unskilled labor rates are abnormally low. There have been all too many instances of an excessive differential in rates between unskilled and skilled labor in this country.

In a study by the Women's Bureau of the U. S. Department of Labor¹ of the operation of minimum wage legislation from 1912 to 1927, not the slightest tendency was found for the minimum to become the maximum. This may not be so significant, since the period was one of a general rise in wage rates. But more significantly, in the two states (California and Arkansas) and the District of Columbia where there was a considerable advance over going rates in establishing the minimum rates, there was a general rise in actual rates and earnings for the whole group of women in the industries affected. In the other seven states studied, the minimum was usually below the going rate so that there was little evident effect upon the wage structure; the main benefit seemed to be that the wages of any grossly underpaid women were raised to the minimum.

In a more recent report² made by the Women's Bureau in 1937, additional evidence is given that there is no tendency for the minimum to become the maximum and some evidence that the proportion earning over the minimum rate tends to increase.

Detailed study has failed to demonstrate any tendency for minimum wage rates to eliminate entirely the differential between unskilled and skilled labor rates.

On the other hand, while there is a tendency in some industries, particularly in low-wage industries, for wages to concentrate initially about the minimum wage and for wage differentials to be narrowed, there is clearly evident a further tendency for customary differentials between unskilled and skilled wage rates to be re-established. And there is evidence that in other industries, particularly high-wage industries, after a minimum wage is set differentials are maintained and even widened.

It seems then that we need not worry much that a minimum wage will make the minimum the maximum or will even narrow wage differentials permanently. But this may lead some to conclude that they should worry for fear minimum wages may be set too high, since the combination of forcing low wages up and the concomitant raising of differential wages may bring the total wage bill to

¹ "The Development of Minimum-Wage Laws in the U.S., 1912 to 1927," Bulletin of the Women's Bureau, No. 61.

² *The Benefits of Minimum Wage Legislation for Women*, Women's Bureau (mimeo.) Mar., 1937.

so high a level that it will result in unemployment, retardation of capital formation, and collateral evils.

But we probably do not actually face such an eventuality. We should fear rather that officials may set minimum rates so low that they will assist only the most underpaid or exploited workers. There is not much danger in this country, or perhaps in any other, of setting a minimum wage too high. Before such a point is reached, forces will probably come into play to keep the minimum down to a level that the economy can support.

RELATION OF WAGE POLICIES AND PRICE POLICIES

EARL J. HAMILTON, *Chairman*

At the round table the following papers were read: "Comparison of Movements of Pay Rolls in Flexible and Inflexible Price Industries," by C. Emery Troxel; "Does the Cyclical Adjustment of Money Wage Rates Produce Corresponding Changes in Prices without Affecting Employment?", by Henry Oliver, Jr.; "Do Current Tendencies in American Labor Organization Tend to Promote Price Rigidity?", by George W. Taylor.

C. EMERY TROXEL undertook the statistical task of measuring the relative amplitude of pay roll changes according to price flexibility, with interest focused on the general conclusion that declines in demand for commodities are reflected in varying proportions of output and price contraction.

Pay roll and price data were gathered for about half of the ninety-odd industries for which the Bureau of Labor Statistics has reported monthly pay roll indexes in recent years. It was possible to obtain price data for forty-six of these predominantly manufacturing industries for the 1922-29 period and for fifty-one of them for the 1929-36 period.

Some of the industries during the depression period had a high pay roll variation and relative smallness of price flexibility; for other industries the price fluctuations were wide and frequent, but the pay roll change was relatively slight. For the agricultural implements industry between 1929 and 1936 the pay roll amplitude figure was 161.7; whereas the price-amplitude and price-frequency figures were 16.5 and 8.2 respectively. Other industries ranking high in pay roll flexibility and low in price flexibility were: structural and ornamental metalwork, steel works and rolling mills, tool, aluminum, coal mining, automobile, rubber tire and tube, carpet and rug, and pottery. The other extreme was exemplified by the meat-packing and petroleum-refining industries which had price amplitudes of 108.8 and 108.0 and pay roll amplitudes of 42.9 and 39.9 respectively. Other industries in the latter category were: canning and preserving, butter, leather, flour, and cotton goods.

It might be expected that some industries would have either high price and high pay roll amplitudes or low price and low pay roll flexibility. Though the pay roll fluctuations in the brick and tile, sawmill, and millwork industries were among the four highest for the depression period, their price amplitudes ranked twenty-eighth, thirty-fourth, and thirty-sixth, respectively.

The data for 1922-29 show some of the same features as those for the depression. There were, for instance, some industries with high pay roll and low price flexibility. But there were more irregularities among the data, i.e., there were more instances of both low pay roll and price variation. This is understandable because of the increased output of durable goods, products which appear to have been largely in the administered-price class.

The preceding comparisons do not affirm or deny an inverse relationship between pay roll fluctuations of industries and rigidity in the prices of their products. Scatter diagrams of these data for the depression period do not reveal

that the pay roll amplitude tended to decline as the price flexibility increased. Furthermore, -0.163 and -0.164 are the insignificant coefficients of correlation respectively of the pay roll amplitude-price amplitude and pay roll amplitude-price frequency data. Scatter diagrams for the data of the 1922-29 period show even less obvious relationships. The coefficients of correlation of $+0.178$ and -0.164 respectively for the pay roll-price amplitude and pay roll amplitude-price frequency data, likewise, are meaningless.

The wage payments for forty-seven of these industries were gathered for 1929, 1931, 1933, and 1935 from the *Census of Manufactures*; and these figures in turn were put in terms of a percentage of their total for each year. When these percentages were classified according to the price flexibility of the products of the industries to which they apply, it was revealed that the proportion of the wages paid in industries with price-amplitude figures of less than 25 declined from 9.9 per cent in 1929 to 6.8 per cent in 1933. Industries with price amplitude figures of less than 50 paid 64.4 per cent of the wages in 1929 and 60.4 per cent in 1933; whereas those with price-amplitude changes of 100 or larger paid 8.8 per cent of the wages in 1929 and 12.9 per cent in 1933.

These statistical results do not affirm conclusively that there is no inverse relationship between pay roll and price flexibility. Unfortunately they cover only a partial list of industries, and there is an overwhelming predominance of manufacturing industries and a scarcity of raw-material industries. Since there is generally a greater price rigidity for manufactured goods than for raw materials, the sample is not representative. Secular changes in demand for the products of some of the industries may account for some of the irregularities of the data.

The difficulty of using these statistical measurements might have been anticipated, because pay rolls are affected by other matters than price policy. It might be as appropriate for one to make price policy the constant and wage rates the variable.

The nature of the demand for the several products might affect the pay roll-price relationship. Doubtless there is a more inelastic demand for some of the commodities than for others. For some of them there may have been a relatively greater change in elasticity of demand as the depression deepened. Perhaps a case of low price and pay roll amplitude is best explained by relative elasticity of demand for the product rather than by administering of prices.

Through reasoning devoid of statistical aid, it seems that support may be given to price inflexibility as a cumulative or aggravating factor in the cyclical process. If for some reason income declines, there will be a decrease in the demand for some or all products. It is possible that the seller of a product who has suffered a decline in demand will choose to maintain the price of the product rather than to maintain sales. While a decline in total pay roll may occur in either instance, its occurrence is assured when the price is pegged and when the resulting decline in employment or wage rates is effected. Furthermore, the additional decline in income results in further decreases in the demand for the products of flexible as well as rigid-price industries. Similar results would be obtained, in so far as the cumulative process is concerned, in the event of delayed reductions of prices instead of pegged prices. Thus, a maladjustment in the price structure because

of poorly timed reductions or persistent maintenance of prices contributes in turn to an intensification of the maladjustment.

HENRY OLIVER, JR., considered three questions: (1) is wage reduction a prerequisite of price reduction; (2) does wage reduction result in price reduction; (3) what are the effects of wage reduction upon the volume of employment.

The argument that wage reduction is a necessary forerunner of all price reduction reflects an oversimplified version of conventional marginal analysis. This version assumes that all variable costs can be reduced to wages, that firms produce at increasing marginal costs, and that price is equal to marginal cost.

Neither the assumptions nor the conclusions of the argument are justified.

Variable costs are affected by agricultural and other independent-producer prices as well as by wage rates. Moreover, in the manufacturing and construction industries, where the demand for wage reduction is usually the greatest, the prices of raw producers' goods form an important element of variable costs which manufacturing wages do not affect.

The assumption that industry is producing at increasing marginal costs is contrary to recent statistical evidence, which suggests that at least since 1933 most firms have been operating at decreasing marginal costs. Comparisons of Bureau of Labor Statistics man-hour employment figures and Federal Reserve Board production figures indicate that recently man-hour output has usually varied directly with total output.

If firms do operate at decreasing marginal costs, they could lower prices merely by increasing output; and, if lower prices really would significantly increase sales, they would go a long way toward making themselves possible.

Furthermore, if firms operate at decreasing marginal costs, prices are not identical with the marginal cost figures; for, if a firm operates at decreasing marginal costs, a price equal to marginal cost would not allow it to meet even all its variable expenses. Thus, price is determined by profits and by returns used to cover overhead as well as by variable costs, and price reductions could be secured by reductions in these items.

How great a price reduction could be secured through the lowering of non-wage variable expenses, through the increasing of output, and through reductions in profits and returns used to cover overhead, depends upon whether the economy as a whole, or merely one segment of it, is considered. In the field of manufacturing, and especially in particular manufacturing industries, the price cuts that could be secured without wage cuts in those particular fields are greater than the price cuts that could be secured without wage cuts in the economy as a whole.

If firms do not cut wages for the purpose of cutting prices, price reductions need not necessarily follow. And during 1929-33 the reduction of losses, rather than the lowering of prices, seems to have been the purpose of the wage decreases.

Perhaps the strongest evidence to support this claim is found in a comparison of pay rolls and other cost items in specific manufacturing industries. In few industries do pay rolls constitute more than 25 per cent of the total value of product; the average figure in manufacturing industries is only 17 per cent. Thus

wage cuts of, say, 25 per cent could not often allow price cuts of from more than 4 to 6 per cent.

A price cut of from 4 to 6 per cent would not significantly increase sales in many industries even during periods of prosperity, when demand is comparatively elastic. During periods of recession, when demand usually seems inelastic, frequently seems discontinuous, and sometimes seems inversely elastic, such price cuts would hardly appear to be important enough to be incentives for wage cuts except in a few very highly competitive industries. Fear of spoiling the market, plus realization of the lack of an elastic demand, would usually more than offset the hope of securing additional sales. This would be true even if the product were not one of which the price only slightly affected the price paid by the final consumer.

Additional evidence that 1929-33 wage cuts were not made for the purpose of lowering prices is furnished by a National Industrial Conference Board report (*Salary and Wage Policy in the Depression*), which indicates that wages fell after prices and the volume of employment, and fell for the same reason as the latter: the reduction of losses.

Wage reductions might lead to increased employment in either of two ways: (a) if not accompanied by price reduction, it might increase the profit margin and so stimulate additional investment; (b) if it resulted in price reduction, it might increase the volume of purchases.

That wage reduction actually would have either of the above results, however, is to be doubted. Certain favorable conditions would have to be present.

For wage reduction to stimulate investment, it would have to do more than merely reduce losses; it would have to make profits reappear. During recession wage cuts cannot usually do this. Moreover, even if profits did reappear, businessmen would have to expand investment immediately to increase employment. If businessmen hesitated (waiting either for new orders or to see how the economy as a whole was reacting) the transfer of income from wage earners to employers would result in a declining propensity to consume and thus in a further drop in sales and employment.

Likewise, price cuts resulting from wage cuts would stimulate sales and employment only if consumers did not take the price and wage cuts as a sign that either prices or incomes would fall farther in the future, and if businessmen did not react by postponing production for fear of future price cuts and further declines in the volume of orders.

That reactions to wage cuts would be favorable is indicated neither by a recent *Fortune* poll of public and employer opinion nor by recent experience.

GEORGE W. TAYLOR stated that in relating the widespread adoption of collective bargaining, which seems to be irresistible in the American labor movement, to tendencies making for price rigidities, it is essential to recognize that: (1) labor negotiations are primarily concerned with a determination of labor costs; (2) between industries, labor cost represents widely varying proportions of the total cost of manufacturing and is, therefore, of varying importance in its effect upon prices; (3) the sum of cost items, including labor cost, may be in part the result of the price of a commodity as much as its cause; (4) the labor movement

so far lacks a unified program designed to raise the general standard of real wages.

There is no need to demonstrate the partial interdependence between prices of commodities and labor cost. But there is a fundamental need for studies showing more precisely the relation, in representative industries, between the various elements of manufacturing costs and retail prices.

Even in the absence of the needed factual evidence, it is logical to assume that the price of an article or of a service to the consumer is ordinarily dependent upon a host of factors, many of which may have far greater influence than labor costs. Rigid labor costs can seldom be the sole cause of rigid prices. Competent economists have concluded that the maintenance of rigid labor costs in coal mining and the building trades is a major cause of rigid prices and of a restricted consumer demand. On the other hand, rigid prices have been quite typical of certain nonunionized industries.

Since data are inadequate to relate wage policies to prices, it is pertinent to consider whether collective bargaining results in a rigidity of labor cost and thereby tends to cause a rigidity of price. One must carefully distinguish between the maintenance of labor costs that represents stability from that which leads to unemployment and reduced consumption. The establishment of fixed labor costs and standards to prevail for several months, or even a year, may be highly desirable, particularly if such standards apply generally throughout an industry. Even this distinction does not explain away the fact that collective bargaining has, in some industries, resulted in a rigid maintenance of the cost of labor, even when the volume of production has been declining and when unemployment has been increasing. Is it at all possible that adherence of unions to such policies has resulted partially from our inability to show, with any degree of precision, the relationship between labor costs, prices, and consumer demand?

When the organization drive is on, union policies are designed primarily to develop and maintain union strength. That often leads to the setting of wage rates on an inflexible basis and to a demand for terms that are pressed mainly because they are politically expedient. The process of organization typically involves such policies as: (1) employer initiated increases of wage rates to forestall unionization; (2) insistence of newly established unions, through the exercise of sheer economic pressure, upon rate increases and improved conditions of work; (3) union maintenance of wage rates, in the face of declining production and employment; (4) inflexible administration of "organization agreements" as respects layoffs, shrinkage of working force, and similar questions, to the extent considered necessary by a union in maintaining its position with employees.

The widespread organizational efforts of labor unions within recent years have, in many industries, resulted in rigidities of labor cost in the face of declining production and employment. This has limited significance if it is typical only of the organization stage but much more fundamental aspects if such results are likely to prove permanent.

Whatever the relation between wages and prices, a limited organization of labor could have but a minor effect upon total costs of production, prices, and real wages generally. Labor unions are now extending their membership largely on

an industrial basis and including unskilled as well as skilled workers in their organization. Following the reports of the President's Commission on Industrial Relations in Great Britain and Sweden, numerous efforts have been made in the United States to promote collective bargaining between an organization of employers of an entire industry and a national union of employees. Certainly as the base of bargaining broadens, the wage-price relationship becomes increasingly important, and the need for precise information on this subject is intensified.

The indications are overwhelming that, in the future, terms of employment will be fixed to an increasing extent through the process of collective bargaining and in many cases on an industrial basis. This need not inevitably result in a rigidity of labor costs. The participation of employees, through their union representatives, in co-operative efforts to reduce costs and prices provides the most likely method by which collective bargaining can be utilized for the improvement of the real wages of labor generally. Advances in this direction can only be achieved gradually and imperfectly. Meanwhile one can expect an increasing emphasis upon union policies designed to improve wages within a particular industry by direct control of marketing and price policies, by governmental wage regulation, and by public relief and assistance. Since there are no reasons to expect that such controls will increase the general level of real wages, the development of collective bargaining on the co-operative basis is urgent. Current tendencies in the labor movement need not cause rigidity of labor cost but can result in an improvement in real wages. The result is largely dependent upon the manner in which collective bargaining develops.

Following the papers there was an animated discussion from the floor, in which (among others) Calvin B. Hoover, Jacob Marschak, Rufus S. Tucker, E. W. Eckard, and Spurgeon Bell participated.

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MINUTES OF THE BUSINESS MEETINGS OF THE AMERICAN
ECONOMIC ASSOCIATION HELD IN DETROIT, MICHIGAN,
DECEMBER 29 AND 30, 1938

The first business meeting of the American Economic Association was held at 9:00 A.M., December 29, 1938, in the Hotel Statler, Detroit, Michigan, President Hansen presiding.

The minutes of the meeting of December 30, 1937, were approved as printed in the *Proceedings of the Fiftieth Annual Meeting*, pages 159-60.

The following reports were read and approved:

1. The Secretary. (See p. 252)
2. The Managing Editor. (See p. 257)
3. The Treasurer. (See p. 259)
4. The Finance Committee. (See p. 261)
5. The Auditor. (See p. 264)

The President appointed Roy G. Blakey, of the University of Minnesota, Ernest M. Patterson, of the University of Pennsylvania, and Harry G. Brown, of the University of Missouri, as a Committee on Resolutions.

The following informal report of the Joint Committee on Income Tax Statistics was read by the Secretary in the absence of J. F. Ebersole:

At the annual meeting in December, 1937, the American Economic Association and the American Statistical Association continued the existing Joint Committee with the same membership as in 1937. The Presidents of these two Associations suggested that the American Institute of Accountants be invited to participate and Mr. Clem W. Collins, president of the Institute, appointed Mr. Henry B. Fernald, Mr. Norman L. McLaren, and Mr. Robert H. Montgomery as their representatives. It has been the intent of the Chairman that the entire Committee with its new members be brought together during the present calendar year with a view to its reorganization but no suitable opportunity for such a meeting has appeared and it is now intended that a general reorganization shall take place early in 1939.

Early in 1938 the United States Treasury asked the Chairman of the Joint Committee to serve as Chairman of an internal committee of the Treasury commissioned to go over at length certain proposed changes in the tabulations for Statistics of Income. As work upon this Treasury survey progressed the Chairman submitted to the members of the Joint Committee by mail certain suggestions which had been raised, asked for criticism of these suggestions and for other suggestions. The time schedule under which the Treasury survey was carried out rendered difficult arrangement for a general meeting of the Joint Committee to go over at a single session the long list of particular suggestions. The Chairman of the Joint Committee, therefore, sought to arrange for his own participation and the participation by correspondence of the other members of the Joint Committee in such a manner as to render the Joint Committee most effective as an aid. It is now anticipated that early in 1939 the Joint Committee can have a meeting at which a considerable list of suggested changes in tabulations, some of which have been proposed by the newly appointed members from the Institute, will be considered.

It is recommended that the two Associations and the Institute continue the Joint Committee during 1939.

The report was accepted and the recommendations of the Committee approved.

Alvin H. Hansen reported orally that little progress had been made in solving the problem of establishing a permanent secretariat of the Association and recommended that this matter be placed in the hands of the incoming administration.

It was voted to discharge from further duties our representative, L. C. Marshall, on the Business Research Council.

It was voted to approve the recommendation of the Executive Committee to amend the by-laws advancing the balloting for officers to October 1 instead of November 1 by substituting in Section III, Paragraph 2, line 6, the word "September" for "October" and Paragraph 3, line 1, the word "three" for the word "two."

Adjourned.

The second business meeting of the American Economic Association was held at 9:00 A.M., December 30, 1938, in the Hotel Statler, Detroit, Michigan, President Hansen presiding.

The minutes of the meeting of December 29, 1938, were read and approved.

The following report of the Committee on Resolutions was read and approved:

WHEREAS, The members of the American Economic Association, meeting in its fifty-first annual session, December 28-30, 1938, in the city of Detroit, Michigan, desire to express appreciation to those who have been chiefly responsible for the success of the conference; therefore be it

Resolved, That the Secretary be instructed to convey the thanks of the members of the Association for the excellent preparations made for the meeting and for the manner in which the details have been handled throughout the session to Professor R. P. Briggs and associates of the Committee on Local Arrangements, to the Detroit Convention and Tourist Bureau for the publicity given to the program and the activities of the Association, and to the others who participated in making the meeting a success; and be it further

Resolved, That we extend to the officers and Executive Committee of the Association and the Program Committee, especially to Professor F. B. Garver, and to the participants in the program our appreciation for their services and contributions to the deliberations of the Association; and be it finally

Resolved, That we extend to the management of the Hotel Statler our thanks for the facilities placed at our disposal and for the co-operation which aided so greatly in insuring the success of our meetings.

ROY G. BLAKELY, *Chairman*
ERNEST M. PATTERSON
HARRY GUNNISON BROWN

The Secretary presented the certification of election:

In accordance with the by-laws on election procedure, I hereby certify the results of the recent balloting, and present the reports of the Nominating Committee and the Committee on Elections.

The Nominating Committee, consisting of Alvin S. Johnson, New School for Social Research, chairman, Ray, B. Westerfield, Yale University, James W. Angell, Columbia University, Calvin B. Hoover, Duke University, Frank D. Graham, Princeton University, Edwin E. Witte, University of Wisconsin, and Bernard F. Haley, Stanford University, presented to the Secretary the following list of nominees for the respective offices:

For President

Jacob Viner
Albert B. Wolfe

For Vice-Presidents

Paul H. Douglas
Willford I. King
Dennis H. Robertson
John H. Williams

For Executive Committee

Ewan Clague
Harry D. Gideonse
Paul T. Homan
Ray B. Westerfield

For American Council of Learned Societies Representative

Frank H. Knight
Isaiah L. Sharfman

For Social Science Research Council Representative

Alvin H. Hansen
Winfield W. Riefler

The Committee on Elections prepared biographical sketches of the various candidates and ballots were distributed early in November. The canvass of the ballots was made on December 10, 1938, and the results were filed with the Secretary.

From the report of the Committee on Elections I have the following information:

Number of envelopes without names for identification	34
Number received too late to count	20
Number of defective ballots	0
Number of legal ballots	1,425
Number of returns from the mail ballot	1,479

On the basis of the canvass of the votes cast, I certify that the following persons have been duly elected to the respective offices:

President (for the term of one year)

Jacob Viner

Vice-Presidents (for the term of one year)

Paul H. Douglas
John H. Williams

Members of the Executive Committee (for the term of three years)

Paul T. Homan
Ray B. Westerfield

Representative to the American Council of Learned Societies (for a term of four years)

Frank H. Knight

Representative to the Social Science Research Council (for a term of three years)

Alvin H. Hansen

JAMES WASHINGTON BELL, *Secretary*
Adjourned.

REPORT OF THE SECRETARY OF THE ASSOCIATION FOR THE YEAR ENDING DECEMBER 14, 1938

The following report includes the minutes of all meetings of the Executive Committee held during the year.

1. Minutes of the second meeting of the 1938 Executive Committee:

The second meeting of the 1938 Executive Committee was held at the Hotel New Yorker, New York City, at 9:00 A.M., March 12, 1938. There were present: President Hansen, presiding, Miss Newcomer and Messrs. Bell, Brown, Dewey, Garver, Goodrich, Graham, Haig, Johnson, and Mills.

Voted: To approve the minutes of the December 30, 1937, meeting as printed in the *Proceedings of the Fiftieth Annual Meeting*, page 163.

Voted: To appropriate \$1,000 for the preparation and printing of the 1938 handbook.

It was decided to publish a more elaborate volume than has been customary heretofore, including additional information with regard to members of the Association; to wit, their university or institution, rank or position, major field of academic interest, most important or indicative publication, etc.

Voted: To authorize the President to appoint, if requested, a representative of the Association to the American Documentation Institute.

Voted: To affirm the previous action of the Executive Committee on the Higgs' bibliography (see pages 162 and 163 of the March, 1938, supplement of the *American Economic Review*, and to instruct the Secretary to explain to parties concerned the reasons for the conditions set forth in this motion.

Voted: To add the following names to the list of foreign honorary members: Dennis H. Robertson, John A. Hobson, David Davidson, Eli F. Heckscher, and Albert Aftalion and Edgard Allix (by mail ballot).

The Secretary was instructed to furnish additional information at the next meeting concerning certain nominees for honorary membership presented but not voted upon.

Voted: To ratify the mail ballot authorizing the publication of a statement in the *American Economic Review* called for by postal regulations.

Voted: To ratify the granting, by the Secretary (in accordance with a previous motion of the Executive Committee granting this power, March, 1939, supplement, page 256), of complimentary memberships to G. W. Mangold, F. H. McLean, and R. H. Towner.

Voted: To submit to the next business meeting a proposal to change the by-laws governing election procedure, permitting the date of nomination and balloting to be advanced one month.

Voted: To confirm the appointment, by the President, of Robert P. Briggs as the Association's representative on the Committee on Local Arrangements for the 1938 annual meeting and of Robert C. Turner as his assistant.

After considerable discussion of the program for the coming meeting, the following action was taken.

Voted: To authorize an amount not to exceed \$300 for mimeographing and distributing the main papers; to approve the expenditure of a moderate amount for stenographic assistance for the chairman of the Program Committee and traveling expenses of the members of the Program Committee for attendance at the meetings of that Committee; to authorize an amount not to exceed \$1,000 to be put at the disposal of the President of the Association for the purpose of financing preliminary meetings with chairmen of round tables and other participants.

Voted: That the President of the Association serve as a chairman of a committee to continue the investigation of the problem of a permanent secretariat for the Association.

The Secretary reported progress in the selection of a meeting place for the 1939 convention.

Adjourned.

2. Minutes of the third meeting of the 1938 Executive Committee:

The third meeting of the 1938 Executive Committee was held at the Hotel Statler, Detroit, Michigan, at 5:00 P.M., December 28, 1938. There were present: President Hansen, presiding, and Messrs. Anderson, Bell, Brown, Clark, and Graham.

Voted: To approve the minutes of the March 12, 1938, meeting as read.

Voted: To ratify mail ballots of members of the Executive Committee on the following matters:

- a) The addition of the name of Edgard Allix to the list of foreign honorary members.
- b) Reversal of previous votes on the contribution of an additional \$833.00 (original amount authorized was \$1000.00) to the Henry Higgs economic bibliography.
- c) Confirming the appointment of Royal E. Montgomery to the Editorial Board of the *American Economic Review* to fill the vacancy created by the death of Edward Bernan.

Voted: To ratify the appointment to the Editorial Board, for a term of three years, Fritz Machlup and Royal E. Montgomery.

Voted: To reappoint the present incumbents on the Finance Committee, Roy C. Osgood, Charles C. Wells, and James Washington Bell.

Voted: To ratify the choice of Philadelphia for the 1939 annual meeting and the appointment of William N. Loucks as our representative on the Committee on Local Arrangements.

Voted: To authorize the issue of engraved certificates, with the seal of the Association, to foreign honorary members.

Voted: To empower the Secretary to dispose of the excessive inventory of *Economic Essays* in honor of John Bates Clark, which still remains on hand.

Voted: To authorize the Secretary to dispose of excessive inventory of copies of back numbers of the *American Economic Review*, and at his discretion to donate on behalf of the Association, and to pay freight on copies needed to replenish files of Chinese institutions of higher learning.

Adjourned.

3. Minutes of the first meeting of the 1939 Executive Committee:

The first meeting of the 1939 Executive Committee was held at the Hotel Statler, Detroit, Michigan, at 12:00 M., December 30, 1938. There were present: President Hansen, presiding, Miss Newcomer and Messrs. Anderson, Bell, Clark, Graham, Homan, and Viner.

The minutes of the December 28, 1938, meeting were read and approved.

A. H. Hansen presented communications from Dr. Lewis L. Lorwin and Professor J. Lescure, concerning the organization of a permanent international economic association (Institut Internationale des Sciences Économiques). Although sympathetic with the idea of the formation of such an organization, it was the consensus of the members that the American Economic Association, as such, should not become affiliated, and certainly not undertake to organize a program. The suggestion was approved that attention of American economists could be called to the international organization by publication of a statement in the *American Economic Review*. It was not thought desirable to designate official delegates as representatives of the American Economic Association to the first session of the Institute to be held in Brussels, July 17 to 19, 1939, though the presence of "observers" on behalf of the American Economic Association would be welcome.

The Secretary-Treasurer presented a summary report of the Association's finances, indicating the chief sources of income and the principal expenditures for the past year. Membership dues and income from investments were explained, and expenses were considered under the headings of operating, publication, program outlays, and the special contribution to the Henry Higgs economic bibliography. Detailed expenses were also reported for the "who's who" handbook of the Association.

It was voted to appropriate a maximum of \$300.00 for the expenses of the Program Committee for 1939, this sum to be used to defray the expenses of the president and chairman of the Program Committee for secretarial services, etc.

The proposal to reduce the fee for life members from \$200.00 to \$100.00 was lost. It was felt that the present rate, though prohibitive, should not be reduced until new revenue is urgently needed.

The present exchange advertisements in the *American Economic Review* were approved, and it was left to the discretion of the Secretary to introduce an exchange of table of contents advertisements instead of the present form.

It was voted to empower a committee appointed by the President consisting of the President, the Secretary, and other appointees to review the proposals for the establishment of a permanent secretariat of the Association, to propose alternate *modus operandi*, and to act in case of emergency with regard to substitute editor or secretary-treasurer of the Association.

The question of affiliation of regional economic associations with the American Economic Association was discussed and previous action reviewed. It was voted to submit to the mem-

bership of the Association a referendum ballot to be printed in appropriate form in the next issue of the *American Economic Review*, this ballot to call for an expression of our members concerning annual meetings at stated intervals in the South and in the West, and calling for a specific vote on the choice of New Orleans for 1940 and San Francisco, 1944 or 1946.

Adjourned.

The Secretary's office edited the *Proceedings of the Fiftieth Annual Meeting* and carried on the regular business of the Association.

The following appointments were made by the President:

Nominating Committee

Alvin Johnson, Chairman
Ray B. Westerfield
James W. Angell
Calvin Hoover
Frank D. Graham
Edwin E. Witte
Bernard F. Haley

Program Committee

Frederic B. Garver
Frederick C. Mills
Corwin Edwards
Alvin H. Hansen
James Washington Bell

Committee on Elections

Albert G. Hart
Lloyd W. Mints
Donald R. Cowan

Auditor

Arthur Andersen and Company

Representative at the Inauguration of the President of University of Dayton

Wilbur P. Calhoun

Representative at the Inauguration of the President of Kent State University

Donald E. Anthony

Representative at the Inauguration of the President of Mount Union College

Alvin Tostlebe

Representative at the Inauguration of the President of Vanderbilt University

Roy L. Garis

Representative at the Inauguration of the President of Tufts College

A. Eugene Staley

Permission for the use of the addressograph list was granted by the President and the Secretary to:

United States Building and Loan League
Principia Press

The changes in the membership list that have taken place during the year ending December 14, 1938, are as follows:

Total members and subscribers in December, 1937	3932
Annual members in December, 1937	2652
Members removed in 1938:	
Resigned	51
Lack of address	10
Nonpayment of dues	72
Died	27
	<hr/>
Members added in 1938	160
	<hr/>
Total annual members in December, 1938	2492
	<hr/>
Life members in December, 1937	272
Removed in 1938	
	<hr/>
Added in 1938	44
	<hr/>
Total life members in December, 1938	4
	<hr/>
Honorary members in December, 1937	17
Removed in 1938	4
	<hr/>
Added in 1938	13
	<hr/>
Total honorary members in December, 1938	6
	<hr/>
Total members in December, 1938	19
	<hr/>
Subscribers in December, 1937	2824
Removed in 1938	
	<hr/>
Added in 1938	1219
	<hr/>
Total subscribers in December, 1938	156
	<hr/>
	1063
	<hr/>
Added in 1938	207
	<hr/>
Total subscribers in December, 1938	1270
	<hr/>
Total members and subscribers in December, 1938	4094
	<hr/>
Net gain	162

I wish to thank the members who have sent in nominations. The above increase in membership is due largely to this co-operation, and I hope the members will continue to aid in maintaining the membership.

It is with regret that I report that notice of the death of the following members was received during the year, and their names have been removed from our active membership list:

Edgard Allix (Honorary Member)
Herbert L. Barber
George E. Barnett
Edward Berman
John W. Bowers
James E. Boyle

Walter S. Case
John B. Clark
Shirley J. Coon
J. S. Cullinan
E. E. Cummins
Henry W. de Forest

Edward A. Filene (Life Member)	F. Fay Murphy
Gilbert S. Parker	George F. Peabody (Life Member)
Charles N. Hulvey	Leroy D. Peavey (Life Member)
Emilie J. Hutchinson	Henry Schultz
Samuel Insull (Life Member)	Raymond F. Smith
Gorton James	Fred W. Sweeney
Harry Jerome	Frank A. Vanderlip
Benjamin T. McBurney	Fiske Warren
Victor Morawetz	George F. Warren
Howard S. Mott	John R. Wildman
Burrus Munn	

Respectfully submitted,

JAMES WASHINGTON BELL, *Secretary*

REPORT OF THE MANAGING EDITOR OF THE AMERICAN
ECONOMIC REVIEW FOR THE YEAR ENDING DECEMBER, 1938

The expenses during 1938 by principal items were as follows:

Printing (paper, reprints, postage, etc.)	\$ 6,079.21
Editorial	2,500.00
Clerical	2,990.00
Supplies	452.96
Contributors	1,435.65
	<hr/>
	\$13,457.82

This is within the budget appropriation submitted a year ago—namely, \$13,800.00 The average number of copies printed this year was 4,500; and the number of pages for the entire volume was 878, a slight decrease from the number of pages in the 1937 volume.

On the basis of printing 4,500 copies per issue in 1939, the following budget is submitted. This, it will be observed, is the same as that provided for in the budget of the current year:

Printing (paper, reprints, postage, etc.)	\$ 6,000.00
Editorial	2,500.00
Clerical	3,300.00
Supplies	400.00
Contributors	1,600.00
	<hr/>
	\$13,800.00

During the year 1938, 942 new books were received, as compared with 775 in 1937. During the year 270 persons have co-operated in writing leading articles, communications and reviews. The number of leading articles published is 33.

The following persons have served as editors during the past year: Professor Fritz Machlup, whose term expires in 1938; Professor Royal E. Montgomery, appointed in the place of Professor Edward Berman, who died in June, and whose term would have expired in 1938; Professors Alzada Comstock and Leonard L. Watkins, whose terms expire in 1939; Professors Arthur R. Burns and B. F. Haley, whose terms expire in 1940.

The usual tables are appended.

Respectfully submitted,
DAVIS R. DEWEY, *Managing Editor*

TABLE I—PAGES GIVEN TO EACH SECTION*

Year	Leading articles	Reviews	New books listed	Documents, reports, etc.	Periodical abstracts	Notes	Theses	Totals
1920	395	109	155	98	122	42	15	936
1921	331	103	133	39	117	38	11	772
1922	293	91	158	35	124	37	13	752
1923	298	122	184	26	113	43	14	800
1924	339	110	191	23	113	42	18	836
1925	325	131	178	27	110	38	23	832
1926	270	137	184	15	108	43	27	784
1927	262	120	195	32	114	42	27	792
1928	335	111	176	12	121	45	28	828
1929	315	181	173	18	1	52	28	768
1930	348	154	210	12	0	58	29	811
1931	369	170	197	13	0	40	25	814
1932	351	175	203	12	0	27	24	792
1933	360	178	179	6	34	28	24	809
1934	376	120	188	7	48	44	22	805
1935	341	198	183	7	46	37	21	833
1936	384	161	185	5	39	31	20	838
1937	386	194	202	4	35	41	20	882
1938	379	179	208	5	44	41	22	878

* Figures for 1911-19 may be found in the report for 1930, published in the *Supplement*, March, 1931, p. 284.

TABLE II—EXPENDITURES

Year	Printing	Salary of editor	Payments to contributors	Clerical	Supplies	Totals
1920	\$6,656.31	\$1,500.00	\$1,122.75	\$1,595.64	\$307.20	\$11,181.90
1921	5,646.97	1,500.00	64.50	1,472.50	319.97	9,003.94
1922	4,795.28	1,500.00	—	1,370.00	314.77	7,980.05
1923	5,032.59	1,500.00	—	1,650.09	437.86	8,620.54
1924	5,423.28	1,500.00	1,110.25	1,464.01	305.32	9,802.86
1925	5,713.01	1,500.00	1,133.50	1,757.32	406.36	10,510.19
1926	5,332.24	1,500.00	1,128.00	1,589.86	323.43	9,873.53
1927	5,619.20	1,500.00	1,013.75	1,806.50	297.25	10,236.70
1928	5,321.95	1,500.00	1,190.50	1,956.50	375.37	10,344.32
1929	4,927.62	1,500.00	1,328.75	2,004.50	261.72	10,022.59
1930	5,386.67	2,500.00	1,447.75	2,253.00	347.80	11,935.22
1931	5,399.94	2,500.00	1,454.75	2,300.00	327.60	11,982.29
1932	5,143.23	2,500.00	1,451.00	2,300.00	386.13	11,780.36
1933	4,606.07	2,500.00	1,408.25	2,436.00	380.75	11,331.07
1934	4,670.43	2,500.00	1,384.75	2,420.00	326.12	11,301.30
1935	5,109.53	2,500.00	1,357.50	2,540.00	445.08	11,952.11
1936	5,316.56	2,500.00	1,450.00	2,540.00	345.12	12,151.68
1937	5,908.40	2,500.00	1,541.75	2,751.00	364.72	13,065.87
1938	6,078.35	2,500.00	1,438.15	2,990.00	452.96	13,459.46

REPORT OF THE TREASURER OF THE ASSOCIATION
FOR THE YEAR ENDING DECEMBER 14, 1938

The total assets of the Association this year, viz., \$62,517.04, is an increase of \$1,488.65 over last year. Individual items showing composition of the assets and liabilities appear in the balance sheet exhibit of the auditor's report and a comparative statement showing increase or decrease for the current year reflects the changes occurring over the period. We have added to our investment account, and the furniture and fixtures item has been increased \$240.00 A new adding machine has been purchased for the Secretary's office at a cost of \$139.05, and a typewriter for the Managing Editor's office at a cost of \$77.76. In previous years equipment for the Managing Editor's office has been shown as a pub-

INVESTMENT PORTFOLIO

Year	At Par		Cost		Market*	Return		
	Bonds	Bonds	Stocks	Total		Stocks and Bonds	Bonds	Stocks
1925	\$25,000	\$24,661.75		\$24,661.75		\$1,350.00		1,350.00†
1926	27,000	26,623.25		26,623.25		1,410.00		1,410.00†
1927	29,000	28,688.45		28,688.45		1,524.70		1,524.70‡
1928	29,000	28,633.45		28,633.45		1,642.77		1,642.77‡
1929	31,000	30,569.48		30,569.48		1,575.44		1,575.44‡
1930	31,000	32,439.48		32,439.48	\$32,635.40	1,695.21		1,695.21
1931	39,500	39,134.48		39,134.48	32,307.44	1,886.81		1,886.81
1932	40,500	41,134.48		41,134.48	33,239.70	2,014.36		2,014.36
1933	33,500	32,962.48	\$ 3,954.23	36,916.71	31,522.50	1,679.49	\$ 108.57	1,789.06
1934	31,500	30,989.48	3,954.23	34,943.71	34,714.00	1,593.13	218.07	1,811.20
1935	16,000	15,280.48	28,114.50	43,394.98	50,338.72	1,022.96	680.70	1,703.66
1936	17,000	16,260.13	33,712.57	49,972.70	62,991.00	801.77	1,597.63	2,399.40
1937	20,000	19,160.91	37,399.20	56,560.11	52,064.75§	884.87	2,689.62	3,574.49
1938	22,000	20,180.95	38,302.20	58,483.15	58,598.88	928.04	2,063.02	2,991.06

* As of date of audit.

† Estimated income for year.

‡ Certificate of deposit interest included.

§ December 3, 1937.

lishing expense of the *Review* and has not appeared among the assets of the Association.

Total income from all sources this year, if we exclude the \$500.00 involved in the Henry Higgs bibliography transaction, remains substantially the same as last year (\$17,428.61 and \$16,910.48). A smaller net income for the year, \$1,220.62 (compared to \$3,085.30 for 1937), resulted from increased expenses (\$15,689.86 compared to \$14,343.31 for the previous year).

Though the income from dues has increased slightly (\$586.29), the return from interest and dividends has been \$633.79 less than last year. Administrative and operating expenses are up \$820.20, chiefly due to increase in wages and salaries; and a further outlay of \$1,333.33 has been made to the Henry Higgs economic bibliography.

Publication expenses continue to increase slightly, but there has been a corresponding increase in the income from the *Review*, principally from the adver-

tising account. Reduction in the size of the *Proceedings* accounts for reduced expenses for this item.

This year's handbook has been substantially enlarged to take the form of a specialized "who's who" in the American Economic Association. The printing of the handbook cost \$1,118.84. To this amount should be allocated some of the expenses of the Secretary's office.

Changes in our investment portfolio and income derived from this source are shown in the accompanying table. It will be noted that our holdings have been somewhat increased and that the market value is now approximately equal to the cost figures. Our income from stocks and bonds is less this year, as was anticipated in the light of the exceptional circumstances under which extra dividends were paid last year. With the exception of 1937, however, this year's income is larger than has been received from this source previously. Further details concerning our investment account may be found in the report of the Finance Committee.

Respectfully submitted,

JAMES WASHINGTON BELL, *Treasurer*

REPORT OF THE FINANCE COMMITTEE

The following changes have been made in our investment holdings during the year:

<i>Sold</i>					
	<i>Par Value</i>	<i>Cost</i>	<i>Selling Price</i>	<i>Profit</i>	
Crown Willamette Paper Co., 1st S.F., 6%, due 1951	\$1,000.00	\$1,005.75	\$1,029.49	\$23.74	
<i>Purchased</i>					
	<i>Shares</i>	<i>Cost</i>			
Household Finance Corp., pfd.	10	\$903.00			
	<i>Par Value</i>	<i>Cost</i>			
Pennsylvania Railroad Co., Gen. Mtg. Series "D," 4 1/4%, due 1981	\$1,000.00	\$986.50			
Chicago, Terre Haute and Southeastern Railway Co., 1st and Ref. Mtg., 50 year, 5%, due 1960	2,000.00	1,039.29			

These transactions represent a net investment of \$1,899.30 (bought \$2,928.79; sold \$1,029.49).

Our security holdings as of December 14, 1938, are listed below, together with figures showing cost and market values. Market figures are compared with last year's figures.

Par Value	Bonds Int. Rate	Due	Cost	Value Market or Last Sale 12/3/37 12/14/38	
\$1,000 Alabama Power Co., 1st Lien and Ref. Mtg.	5%	1956	\$ 1,042.50	\$ 920.00	\$ 967.50
1,000 Chicago, Terre Haute and Southeastern Railway Co., 1st and Ref. Mtg. 50-year	5	1960	972.83	785.00	}
1,000 Chicago, Terre Haute and Southeastern Railway Co., 1st and Ref.	5	1960	520.27		1,755.00
1,000 Chicago, Terre Haute and Southeastern Railway Co., 1st and Ref.	5	1960	519.02		}
1,000 Erie Railroad Co., Ref. and Imp. Mtg.	5	1975	932.50	465.00	132.50
2,000 Gary Electric and Gas Co., 1st Lien Col. Series "A"	5	1944	1,920.40	1,700.00	1,910.00
2,000 Grand Trunk Western Railway Co., 1st Mtg. 50-year	4	1950	1,855.45	1,795.00	1,760.00
3,000 Gulf States Steel Co., 1st (closed) Mtg. Sinking Fund	4 1/2	1961	2,900.78	2,505.00	2,835.00
2,000 Nevada-California Electric Corp., 1st Mtg.	5	1956	1,895.40	1,430.00	1,580.00
1,000 Pennsylvania Railroad Co., 40-year Gold Deb.	4 1/2	1970	945.00	875.00	830.00
1,000 Pennsylvania Railroad Co., Gen. Mtg. Series "D"	4 1/4	1981	986.50		920.00
1,000 Southern Illinois and Missouri Bridge Co., 1st Mtg. 50-year	4	1951	822.00	850.00	650.00
1,000 Southern Pacific Co., 50-year	4 1/2	1981	927.50	617.50	507.50
2,000 Southern Railway Co., 1st Consol. Mtg.	5	1994	2,070.40	1,835.00	1,630.00
2,000 West Texas Utilities Co., 1st Mtg. Series "A"	5	1957	1,870.40	1,735.00	1,987.50
			<u><u>\$20,180.95</u></u>	<u><u>\$15,512.50</u></u>	<u><u>\$17,465.00</u></u>

Number and Class of Shares	Stocks		
	Cost	Market or Last Sale 12/3/37	Value 12/14/38
25 Chesapeake and Ohio Railroad Co., com.	\$1,309.07	\$ 981.25	\$ 862.50
50 General American Transportation Corp., com.	3,084.30	1,950.00	2,775.00
100 General Electric Co., com.	2,738.19	4,387.50	4,425.00
50 General Motors Corp., com.	2,057.47	1,781.25	2,512.50
58 Glidden Co., com.	1,635.72		1,435.50
		1,926.00	
14 Glidden Co., convert. pfd.	735.00		644.00
10 Household Finance Corp., 5% pfd.	903.00		1,030.00
25 International Harvester Co., pfd.	3,686.63	3,450.00	4,050.00
50 Kroger Grocery and Baking Co., com.	1,297.22	825.00	1,025.00
25 Liggett and Myers Tobacco Co., com. "B"	2,018.13	2,250.00	2,459.38
50 Link-Belt Co., com.	2,524.15	1,800.00	2,337.50
50 Mesta Machine Co., com.	2,007.37	2,050.00	2,000.00
50 J. C. Penney Co., com.	2,878.28	3,475.00	3,825.00
50 Procter and Gamble Co., com.	2,459.72	2,375.00	2,743.75
50 Standard Brands, Inc., com.	888.15	431.25	325.00
50 Standard Oil Co. of California, com.	2,097.27	1,550.00	1,406.25
50 Union Carbide and Carbon Corp., com.	2,867.88	3,587.50	4,475.00
100 Wayne Pump Co., com.	3,114.65	2,700.00	3,100.00
	\$38,302.20	\$35,519.75	\$41,431.38

The liquidating or market value of our stocks and bonds as of December 14 was \$58,896.38 compared to \$52,064.74 on December 3, 1937. It is approximately the same as the cost figure of \$58,483.15. The book value, i.e., the lower figure of market or cost, is \$52,737.24 compared to \$46,264.85, the corresponding figure last year. The figures for this year include 10 Household Finance preferred at \$903.00 and \$1,000 Pennsylvania 4 1/4's at \$945.00.

Judged by all standards, the market value of our portfolio has held up quite well.

The income for the year 1938 has been as follows:

Interest on bonds	\$ 928.04
Dividends from stocks	2,063.02
Total	\$2,991.06

This represents an average return of 4.14 per cent on bonds and 5.16 per cent on stocks; roughly, 5 per cent on the total cost of the securities. A comparison of the dividends, regular and extra, with those received last year explains the lower return. Income from stocks last year amounted to \$2,689.62, a 7.1 per cent return. Income from bonds is only slightly less than last year, due to the Erie Railroad default. Smaller extra payments were anticipated in our last year's report. Under the circumstances, a yield of over 5 per cent compared to 6.3 per cent for 1937 may be considered very satisfactory.

We have seen no reason to change the investment principles governing the administration of this fund which, as indicated in last year's report, was to conserve capital under conditions of business uncertainty and to obtain a reasonable yield and stability of income.

A conservative preferred stock has been added to our list (Household Finance Corporation) and some new money and the proceeds of the Crown Willamette sale have been put into bonds. This leaves our present portfolio about \$40,000 in

stocks and \$20,000 in bonds or relatively the same two-thirds to one-third relation which prevailed last year. We are attempting to maintain at least this relative proportion of bonds, but it is becoming increasingly difficult to find satisfactory issues in this category.

The Crown Willamette paper bonds were called for payment on January 1, 1939, and this was thought to be an opportune time to purchase two additional Chicago, Terre Haute and Southeastern Railway bonds.

The Erie Railroad Company bond is at present in default, and the Company is undergoing reorganization, but we have not disposed of this security because it is felt that this issue will be sufficiently well treated to more than warrant its present market value.

ROY C. OSGOOD, *Chairman*

CHARLES C. WELLS

JAMES WASHINGTON BELL

REPORT OF THE AUDITOR

December 20, 1938

*Executive Committee,
American Economic Association,
Evanston, Illinois.*

DEAR SIRS:

We have made an examination of the balance sheet of the American Economic Association as at December 14, 1938, and of the related statement of income and expenses for the period from December 16, 1937, to December 14, 1938. In connection therewith, we examined or tested accounting records of the Association and other supporting evidence and obtained information and explanations from the secretary-treasurer and assistant secretary; we also made a general review of the accounting methods and of the operating and income accounts for the year, but we did not make a detailed audit of the transactions. We did not examine the balance sheet at December 15, 1937, and statement of income and expenses of the Association for the period from December 13, 1936, to December 15, 1937. These statements, included in this report for purpose of comparison, were taken from the report of the previous auditors. Further comments regarding the scope of our examination are contained in subsequent pages of this report.

The following exhibits are included in this report:

Balance sheet—December 14, 1938	Exhibit 1
Statement of income and expenses for period from December 16, 1937, to December 14, 1938	Exhibit 2

Results of Operations

Net income for the year ended December 14, 1938, was \$1,220.62 as compared with \$3,085.30 for the preceding period, as shown by the following condensed comparative summary:

Particulars	Year Ended		Increase or Decrease
	Dec. 15, 1937	Dec. 14, 1938	
Income from—			
Dues	\$13,378.36	\$13,964.65	\$ 386.29
Interest and dividends on investments	3,546.02	2,912.23	633.79
Contribution received from member to finance Higgs' economic bibliography	500.00		500.00
Other sources	4.23	33.60	29.37
Total income	\$17,428.61	\$16,910.48	\$ 518.13
Less—			
Expenses—			
Administrative and other operating expenses	\$ 6,020.30	\$ 6,840.50	\$ 820.20
Contributions to finance Higgs' economic bibliography—			
Contributions of the Association	500.00	1,333.33	833.33
Contribution by member (see above)	500.00		500.00
Publication expenses	15,206.50	15,881.71	675.21
Publication income	7,883.49	8,365.68	482.19
Total expenses	\$14,343.31	\$15,689.86	\$1,346.55
Net income	\$ 3,085.30	\$ 1,220.62	\$ 1,864.68

The increase in income from dues reflects the increase in the membership of the Association during the period under review. The membership at the beginning and end of the period as reported by the secretary was as follows:

Members—	Classification		Number of Members	
	Dec. 15, 1937	Dec. 14, 1938	Dec. 15, 1937	Dec. 14, 1938
Annual	2,652	2,764		
Life	44	41		
Honorary	17	19		
Total members	2,713	2,824		

Interest on bonds owned was accounted for and dividends received on stocks were compared with amounts reported in published records of dividend disbursements.

During the previous period a special contribution of \$500.00 was received from a member toward the financing of Higgs' economic bibliography. No similar contributions for special purposes were recorded during the current year.

The increase in administrative and other operating expenses reflects an increase of \$870.00 in office salaries, accounted for by a change in the salary of the assistant secretary, authorized by the executive committee, and the employment of a clerk in the office of the secretary-treasurer for the entire year under review as compared with only six months of the preceding year.

Publication costs for 1938 included the expense of issuing a *Handbook*. Additional advertising revenue in 1938 offset in part the increased publication costs, leaving an increase of \$193.02 in net publication expense for the year 1938, as shown by the following summary:

Particulars	Fiscal Year		Budgetary Estimates for 1938
	1937	1938	
Expenses—			
Printing of—			
<i>Review</i>	\$ 6,008.12	\$ 6,119.21	\$ 6,000.00
<i>Proceedings</i>	1,922.03	1,234.10	
<i>Handbook</i>	*	1,118.84	
Editor's honorarium	2,500.00	2,500.00	2,500.00
Payments to contributors	1,541.75	1,435.65	1,600.00
Editorial clerical salaries	2,751.00	2,990.00	3,000.00
Other costs and expenses	483.60	483.91	400.00
Total expenses	\$15,206.50	\$15,881.71	\$13,500.00
Less— Income—			
Subscriptions, other than from members	\$ 5,826.06	\$ 5,973.74	
Sales of copies	696.02	565.23	
Advertising	1,361.41	1,826.71	
Total income	\$ 7,883.49	\$ 8,365.68	
Net publication expense	\$ 7,323.01	\$ 7,516.03	

* None issued in 1937.

The Association issued the following publications during the year 1938:

	Quantity Printed	Number of Pages
<i>Review</i>	4,500	966*
<i>Proceedings</i>	4,500	200
<i>Handbook</i>	4,500	112

* Including 16 page volume index.

Financial Condition

Condensed balance sheets of the Association at December 15, 1937, and December 14, 1938, are presented in the following comparison:

Assets			Increase or Decrease
	Dec. 15, 1937	Dec. 14, 1938	
Cash in bank	\$ 1,497.98	\$ 1,113.15	\$ 384.83
Receivables, net	980.76	837.25	143.51
Inventories, at cost	1,747.54	1,722.61	24.93
Furniture, fixtures, etc., at cost	1,394.43	1,634.46	240.03
Reserve for depreciation	1,152.43	1,273.58	121.15
Investments, at cost, in—			
Bonds	19,160.91	20,180.95	1,020.04
Stocks	37,399.20	38,302.20	903.00
	<u>\$61,028.39</u>	<u>\$62,517.04</u>	<u>\$1,488.65</u>
Liabilities			
Accounts payable	\$ 108.75	\$ 75.59	\$ 33.16
Unearned income	2,805.49	3,017.35	211.86
Membership extension fund	3,546.84	3,436.17	110.67
Fund for proposed permanent secretariat	35.00	35.00	
Life memberships	3,900.00	3,725.00	175.00
Surplus—			
Balance December 15, 1937	50,632.31	50,632.31	
Net income for year ended December 14, 1938		1,220.62	1,220.62
Transfers from life memberships		375.00	375.00
	<u>\$61,028.39</u>	<u>\$62,517.04</u>	<u>\$1,488.65</u>

The following securities were purchased and sold in 1938:

	Principal Amount	Purchase or Selling Price
Purchased—		
The Pennsylvania Railroad Company, general mortgage, Series D, 4 1/4%, due April 1, 1981	\$1,000.00	\$ 986.50
Chicago, Terre Haute and Southeastern Railway Company, first and refunding mortgage, 5%, due December 1, 1960	2,000.00	1,039.29
Household Finance Corporation, 5% preferred stock, 10 shares		903.00
	<u>=====</u>	<u>\$2,928.79</u>
Sale—		
Crown Willamette Paper Company, first mortgage sinking fund, 6%, due January 1, 1951	\$1,000.00	\$1,029.49

The investments of the Association were confirmed by correspondence with The State Bank and Trust Company of Evanston, Illinois, custodian for the Association.

Cash in bank was reconciled with balance confirmed direct to us by the depository.

The inventories of the Association include 499 copies of *Economic Essays* carried at their cost of \$2.40 each. There were no sales of this publication during the year under review and the inventory remained unchanged from December 15, 1937. In view of the lack of sales the realization of the inventory valuation appears doubtful.

We did not confirm the receivables of the Association by correspondence with the debtors. In so far as we could ascertain from the examination made, all

liabilities of the Association at December 14, 1938, are reflected in the accompanying balance sheet and the secretary-treasurer has represented that to the best of his knowledge and belief all liabilities were disclosed to us. We did not confirm the liabilities of the Association by correspondence with the creditors.

We wish to express our appreciation of the courtesies and co-operation extended to our representatives during the course of the examination.

Very truly yours,

ARTHUR ANDERSEN AND COMPANY

EXHIBIT I

AMERICAN ECONOMIC ASSOCIATION
BALANCE SHEET—DECEMBER 14, 1938

ASSETS

CURRENT ASSETS:

Cash in State Bank and Trust Company, Evanston, Illinois				\$ 1,113.15
Receivables—				
Interest accrued on bonds	\$ 233.83			
Membership dues	148.75			
Review advertising	456.49			
Publication sales	40.88			
Sundry	37.30			
Total receivables	\$ 917.25			
Less—Reserve for doubtful accounts	80.00			

INVENTORIES, AT COST:

Economic Essays (see report)				\$ 1,197.60
Cover stock				265.05
Stamped envelopes				259.96

INVESTMENTS, AT COST:

Bonds (quoted price \$17,465.00)	\$20,180.95			
Stocks (quoted price \$41,431.38)	38,302.20			

FURNITURE, FIXTURES, AND BOUND PERIODICALS, AT COST

Less—Reserve for depreciation				

Liabilities

ACCOUNTS PAYABLE				\$ 75.59
UNEARNED INCOME:				

Membership dues	\$ 484.80			
Subscriptions	2,532.55			

MEMBERSHIP EXTENSION FUND				3,436.17
FUND FOR PROPOSED PERMANENT SECRETARIAT				35.00

LIFE MEMBERS AND SURPLUS:

Life memberships				\$ 3,725.00
Surplus unappropriated—				
Balance, December 15, 1937	\$50,632.31			
Net income for year ended				
December 14, 1938 (Exhibit 2)	1,220.62			
Transfers from life memberships	375.00			

\$62,517.04

EXHIBIT II

AMERICAN ECONOMIC ASSOCIATION

STATEMENT OF INCOME AND EXPENSES PERIOD FROM DECEMBER 16, 1937, TO
DECEMBER 14, 1938

	Particulars	Amount
INCOME FROM:		
Dues—		
Regular members		\$13,717.15
Subscribing and contributing members		247.50
Other sources—		
Income from investments—		
Interest on bonds	\$ 928.04	
Dividends	2,063.02	
Total	\$ 2,991.06	
Less—Custodian's fee	78.83	\$ 2,912.23
Profit on sale of bond		23.74
Royalties on sales of <i>Economic Essays</i>		6.20
Miscellaneous income	3.66	2,943.83
	Total income	\$16,910.48
EXPENSES:		
Administrative and other operating expenses—		
Secretary's salary	\$ 1,000.00	
Office salaries	3,682.50	
Postage	421.01	
Stationery and supplies	200.36	
Telephone and telegraph	63.78	
Insurance	205.00	
Exchange on checks	124.47	
Depreciation	121.15	
Annual meeting	332.01	
Executive committee expenses	365.41	
Other committee expenses	185.65	
American Council of Learned Societies—dues	65.00	
Auditing	50.00	
Miscellaneous	24.16	\$ 6,840.50
Contributions to finance Higgs' economic bibliography		1,333.33
Publication expenses—		
Printing of—		
Review	\$ 6,119.21	
Proceedings	1,234.10	
Handbook	1,118.84	
Editor's honorarium	2,500.00	
Payments to contributors	1,435.65	
Editorial clerical salaries	2,990.00	
Editorial supplies and expenses	375.20	
Editor's traveling expenses	72.95	
Sundry publication expenses	35.76	
	Total publication expenses	\$15,881.71
Less—Publication income—		
Subscriptions, other than from members	\$5,973.74	
Sales of copies	565.23	
Advertising	1,826.71	8,365.68
		7,516.03
	Total expenses	15,689.86
	Net income (Exhibit I)	\$ 1,220.62

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1939

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